GeriNotes

May 2023 • Vol. 30 No. 3

APTA Geriatrics
An Academy of the American Physical Therapy Association
Age on.™

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In This Issue

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From the President

Cathy Ciolek
President,
APTA Geriatrics

This week, I received a message from our county police department with a community alert about phone scams targeting older adults. They actually used "elderly" victims in the title — we could certainly spend time addressing the language issue this raised. However, I want to actually focus on the message to help raise awareness of scams being perpetrated against our patients and society.

The warning message describes phone calls using information about a child or grandchild needing money to be released from jail or needing immediate medical attention. These are designed to stir emotions and make logical thinking difficult. Yet, most of us have already had conversations with our older adult family members to say we would never make this type of call. Social media has made this trickier, and so I want to share this experience of a family member with you.

I'll refer to her as Mrs. J. She was contacted on Facebook by a "friend" who she has known for years. The "friend" started by referencing events surrounding some recent posts Mrs. J had made about her and her husband. This helped to establish her identity and confirm the relationship. The conversation went on for days, the usual back and forth. Then the "friend" asked for help with getting a gift card for her grandchild. Mrs. J thought about it, but didn't respond right away, though she eventually assisted by sending a gift card. You can see where this goes. Several more requests followed until Mrs. J had sent thousands of dollars in gift cards. Mrs. J was incredibly embarrassed and ashamed but did file a police report after being reassured this happens to too many people.

APTA Geriatrics has an advocacy priority to promote a positive, active aging experience. This experience was not positive and resulted in my family member withdrawing from many social connections, beyond just the financial cost. And she is not alone. In 2021, 92,000+ people over the age of 60 reported loss of $1.7 billion to the Internet Crime Complaint Center, and we know only a portion of victims actually report the crime. Older adults are less likely to report losing money to fraud, and are more likely to lose larger amounts. Older adults are increasingly being defrauded via online contacts, with gift card requests becoming the primary payment method of choice for scammers.

As physical therapists, we are in people's homes and see inpatient and outpatients in the clinic. We have an opportunity to add discussions about fraud specifically directed to their demographic and we can raise awareness of this issue. We are also children of parents, nieces and nephews of aunts and uncles, and connected to many in our community through church and civic organizations. Consider having this as a prompt or a great conversation starter to raise awareness in your community to potentially avoid another older adult becoming a victim of a scam that can directly impact their self-image and financial wellbeing.

Protect yourself and your loved ones from scams targeting senior citizens by sharing the following tips.

- Verify that it is your grandchild by contacting their parents or by asking a question only your real grandchildren would know the answer to.
- Resist pressure to send money quickly and secretly.
- Be careful what you put online.
- Be suspicious of urgent requests.
- Be wary of late-night calls.
- Don't be quick to act.
- Let the call go to voicemail or have them call back.
- If they're asking for payment with gift cards of any kind, it's likely a scam.
- Please do not hesitate to call 911 even if the scam was only an attempt and unsuccessful.

Questions for APTA Geriatrics leaders and staff can be submitted to geriatrics@aptageriatrics.org.

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From the Editor

Michele Stanley
Editor,
GeriNotes

"Alone we can do so little; together we can do so much." —Helen Keller

Since the administration of President George H. W. Bush, April has been designated as "Volunteer Appreciation" month. Perhaps you took part in celebrations by thanking the volunteers at the facility in which you work? Perhaps you were celebrated for teaching classes at a local senior center, providing safe lifting training to the community rescue squad, visiting high school job exploration classes, mentoring an observation student, or serving in a pro bono clinic? There are lots of opportunities to provide community service well suited to the skills and training of physical therapists. Volunteering has many health and social benefits:

- Making new friends
- Increasing your personal knowledge and understanding of the community in which you live and work
- Increasing your sense of purpose and feeling of happiness
- Boosting your self-esteem, self-confidence, and life satisfaction
- Decreasing mortality and stress
- Increasing brain function by stimulating problem solving skills, making new memories, reduce the risk of age-related isolation and disease

Volunteering *within our profession and the APTA* is a great way to make personal and professional connections while making a difference to the profession. It doesn't need to be a heavy lift; opportunities range from several hours to weekly or monthly commitments. All are important. APTA Geriatrics has many positions on the Board of Directors, Nominating Committee, and Special Interest Groups (SIGS) that are now open. Nominations are due June 6 for positions that will transition at CSM in February. Self-nominations are lovely! Nominate yourself or others at https://aptageriatrics.org/about-academy-geriatrics-pt/leadership/elections/

In addition to the general and considerable benefits from volunteering, specifically volunteer within APTA Geriatrics:

- Increases your professional contacts and friendships
- Fosters learning about health care/laws/business
- Promotes opportunity for travel
- Provides job prospects and career opportunities
- Strengthens your professional knowledge
- IT IS FUN! PTs are funny, engaging people

Speaking of volunteers, read the report of the Cognitive and Mental Health (CMH) Toolkit and check out the great free resource that the CMH SIG developed. Get inspired by Michelle Lusardi's response to interest in development of an Annual Mobility Evaluation. Start planning a Fall Prevention Day!

"We make a living by what we get. We make a life by what we give." —Winston Churchill

APTA Geriatrics Journal Club

*Register for the free **Journal Club** discussion webinars and earn 1.5 contact hours. Questions for presenters may be emailed to gerinoteseditor@gmail.com before or on the day of the webinar. See what's coming up at https://geriatricspt.org/events/webinars/.*

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Mission: To provide engaging content that empowers the community of physical therapy clinicians to build expertise and expand the delivery of evidence-informed care that promotes health and wellness in aging adults.

Vision: To create an evolving online community through which clinicians develop their knowledge and skills based in shared ideals that are person-centered; and promote a world where aging adults move, live, and age well.

Incorporating Mobility Measures into Routine Clinical Practice

by Michelle M. Lusardi, DPT, PhD, FAPTA

Introduction

I was honored to present the 5th Carole B. Lewis Lecture for the Academy of Geriatrics during APTA Combined Sections Meeting 2023. As the lecture concluded, I challenged the Academy to create, implement, and evaluate a "mobility wellness check" for all older adults, and to use the data generated to build a "BIG DATA" set that would allow us to describe "typical performance" and calculate values indicating "real change" in performance (minimal detectable difference and/or minimal clinically important difference) not only for community living elders, but also across all the settings in which we provide care.[1] While a Medicare approved yearly Mobility Wellness Check physical therapy visit is, as of yet, an aspiration for the future, the lecture has generated a great deal of interest and numerous offers to help in getting things started with pilot data collection. Many colleagues have reached out to indicate willingness to use the measures proposed for the mobility wellness check in their practices now. The purpose of this article is to describe how and why these 4 simple, continuous level mobility measures can be incorporated into routine physical therapy practice, to begin building the evidence needed to understand function across the many settings in which we provide care.

Why Use Continuous Measures?

Numerous tests and measures attempt to quantify mobility capacity for older adults. While descriptive statistics can be applied to both continuous and ordinal-level tests/measures, change in performance (an index of effectiveness of intervention) is best determined by those based on a continuous (ratio) scale.[2] Continuous measures, such as walking speed and other timed tests, have a "true zero" and are based on time and/or distance parameters. The interval between continuous values is known and equal; change can be evaluated by powerful parametric statistics. The suggested measures have strong (high) reliability indices such that their measurement error (standard error of measurement-SEM) is typically low. Because minimal detectable difference (MDD) or minimal clinically important difference (MCID) values are calculated using SEM, MDD and MCID values will likely also be small. MDD and MCID values help us to be more confident that change in scores from initial to discharge evaluation is real, i.e., beyond the influence of chance or measurement error. Continuous measures mark meaningful change more quickly and accurately than ordinal measures, making them powerful outcome measures.[3]

In contrast, ordinal measures such as the Short Physical Performance Battery (SPPB) and the Berg Balance Scale (BBS), include multiple motor tasks/Items ranked by performance to summarize mobility and balance.[4] Ordinal measures use numbers as labels to infer magnitude but have unknown and likely uneven intervals between values. Reliability indices are often somewhat lower, reflecting greater measurement error (effect of chance). SEM values tend to be larger, leading to higher MMD and MCID values. Clinically, there must be more change in performance before we can be sure change in performance is not due to measurement error and/or chance. In addition, ordinal measures are evaluated using less powerful nonparametric statistics.[5] This does not mean that ordinal tests/measure fail to provide important information to guide practice. Looking at the items a patient has the most difficulty with can help focus plan of care. The disadvantage in using ordinal scales test/measures to assess outcomes lies in the measurement error inherent in ordinal summary scores.

Recommended Mobility Measures

The four continuous measures proposed for mobility assessment are: (Table 1)

1. **Self-selected (usual) walking speed** as an index of overall mobility and functional reserve
2. **Chair rise (five times sit to stand)** as an indicator of lower extremity muscle performance
3. **Timed Up and Go** (single task, manual dual task, and cognitive dual task) to assess divided attention during a complex mobility task, and
4. **Four Square Step Test** to consider obstacle clearance and ability to move in multiple directions.

Each of these are also indicators of balance and risk of falls. Most have been well evaluated in community living older adults, have strong reliability and validity indices, reported means and standard deviations by decade of age and gender (at least for community living elders), "cut scores" for fall risk, and evidence of MDD and/or MCID values with which to interpret outcomes.[6-14] There is less information about typical performance on these

Table 1 Summary of characteristics of recommended continuous/interval level mobility tests/Measures. Note that where normative values and MDD/MCID have not been reported for the general population of older adults, there is evidence for persons with amputation, osteoarthritis, hip replacement, stroke, adults with cerebral palsy and other medical diagnoses in the literature.

Measure	Concept	Mean (SD)	Reliability	MDC	Equipment
Self-Selected Walking Speed (5 m walk)	"BP" for mobility & overall health	(m/s) Age Men Women[6] 70-79 1.6(0.5) 1.3(0.3) 80-89 1.3(0.1) 1.1(0.1) 90-99 1.1(0.3) 0.8(0.2) Combined: 1.1 (0.1) Meta-analysis: mean(range)[7] 60-69 1.3(1.3-1.4) 1.2(1.2-1.3) 70-79 1.3(1.2-1.3) 1.1(1.2-1.3) 80-99 1.0(0.8-1.1) 0.9 (0.9-1.0)	ICC = .96[8] SEM =0.01[7]	0.1-.2 m/s9 (Systematic review)	10 m (39') pathway with 2.5 m acceleration, 5 m steady and 2.5 m deceleration areas Chairs as targets either end Stopwatch, tape to mark steady state area
Chair Rise (5 times sit to stand)	Lower extremity muscle performance	60-69 11.4 s[10] 70-79 12.6 s 80-89 14.8 s	ICC = 0.95[11] SEM = 0.9	MDC = 2.5s[11]	Armless chair (18 in. seat height) Stopwatch
Timed Up and Go Single Task Motor Dual Task Cognitive Dual Task	Balance Overall mobility Divided attention	Single Task in s [12] Age Men Women 65-69 8.2 (1.7) 8.4(2.2) 70-74 8.7 (1.7) 9.0(2.2) 75-79 9.5 (1.7) 9.9(2.2) 80-84 10.4 (1.7) 11.0(2.2) 85-90 11.2 (1.8) 12.0(2.2)	ICC =.93[13] SEM =0.7	MDC = 1.8s[13]	Armless chair (18 in. seat height) Stopwatch Small cone for 3 m (10 ft.) distance Cup to fill with water
Four Square Step Test	Balance Multidirectional movement Obstacle Clearance	Not yet reported for all older adults Some available for specific patient populations by medical diagnosis	ICC = .73–.98[14] systematic review	Not yet reported for all older adults	Four 3 Ft. lengths of 1 in. diameter PVC pipe Four-way PVC connector Stopwatch

measures in older adults residing in assisted living or long-term care settings, or for those in acute care or subacute rehabilitation settings. Secondary analysis of routinely collected performance data collected during routine practice provides an opportunity to develop typical performance values for the subpopulation of older adults receiving care in specific settings. In addition, developing MDD and MCID values specific to setting will enhance ability to document change in function more precisely than values derived from community living older adults. Using these measures in periodic functional screening is likely to catch small declines in function before they become problematic.[15]

Getting Started

In clinical settings, the first step in incorporating mobility measures into routine practice is education of staff and administration of the value of doing so.[16] While the proposed required yearly mobility screening by a physical therapist has not yet been formally proposed to the Centers for Medicare and Medicaid (CMS), each of the recommended measures are Medicare approved outcome test/measures. Using these measures will allow individual practices and agencies to better describe their patient population and generate information to improve outcome assessment in their setting.[17] A small pilot study of the protocol in an outpatient setting revealed that the necessary equipment is inexpensive and readily available, the biggest challenge being at least 39 ft. hallway or other space for assessing walking speed, (see Table 1, last column). This battery of mobility tests has been completed within 15 minutes during the pilot study.

For Outcome Assessment

To evaluate outcomes, these measures should be employed at initial evaluation (as a baseline) as well as at discharge. Measures would need to be incorporated into the electronic medical record and a strategy for extracting de-identified data developed.[17] Alternatively, information from a "paper" evaluation form (Table 2) could be entered into a simple data base (Table 3). Recording 2 trials is strongly suggested, as the mean of multiple trials better estimates typical performance. An initial practice trial may be helpful, especially with individuals coping with delirium or mild-moderate dementia. A single trial may be warranted for those with significantly compromised endurance or substantial pain.

Table 2

SENIOR MOBILITY: DATA FORM

PATIENT INITIAL: _____ SS (last four): _____ Date: _____

DoB: _____ Gender: M F

Facility ID: _____ Evaluator: _____

Fall History: _____

Dx/IDC code: _____

Assistive Device: (circle)
None Cane L Cane R Standard Walker Wheeled Walker Other:_____

Measure	Trial 1 Time	Trial 2 Time	Comments
5 Meter Walk			
Chair Rise			
Four Square Step			
TUG Single Task			
TUG Manual			
TUG Cognitive			

Table 3 Example of an Excel data file set up for initial and discharge information on mobility measures.

Subject ID	Date	DoB	Gender	Facil-ID	Evaluator	#Falls	IDC	Assist Dev	W1	W2
EP3247	**3/3/23**	**1/2/54**	**1**	**1**	**MML**	**1**	**I69.113**	**0**	**7.00**	**6.70**
LL1234	**3/3/23**	**2/7/52**	**0**	**1**	**MML**	**0**	**Z96.641**	**0**	**5.40**	**5.70**
MG3412	**3/3/23**	**3/12/57**	**1**	**1**	**MML**	**1**	**M80.08**	**4**	**8.20**	**7.90**

Chair 1	Chair 2	4SQ1	4SQ2	TUGS1	TUGS2	TUGM1	TUGM2	TUGC1	TUGC2
13.5	**15.2**	**15.7**	**14.2**	**15.7**	**14.9**	**16.8**	**17.2**	**20.1**	**19.6**
9.3	**8.9**	**14.2**	**14.8**	**13.2**	**13.9**	**14.2**	**14.6**	**15.3**	**15.6**
15.2	**15.9**	**unable**	**unable**	**17.3**	**16.9**	**unable**	**unable**	**21.3**	**22**

KEY:

Subject ID Initials and last 4 of SS# or hospital ID #
Gender 0 = male, 1 + female
#falls Falls reported in last 6 months
IDC Primary medical diagnosis
Assist Dev Ambulatory assistive device 0=none, 1=straight cane, 2=quad cane, 3=standard walker, 4=wheeled walker, 5=other
W1& W2 5-meter walk time, trials 1 and 2, in m/sec (=5m/#sec)

Chair1 & 2 5 Times sit to stand, trials 1 and 2, in sec.
4SQ1 & 2 4 Square step test, trials 1 and 2, in sec.
TUGS1 & 2 Single Task Timed Up and Go, trials 1 & 2, in sec.
TUGM1 & 2 Manual Dual Task Timed Up and Go (carrying full cup of water), Trials 1 & 2, in sec
TUGC1 & 2 Cognitive Dual Task TUG (subtracting serial 3s from random number), Trials 1 &2, in sec.:

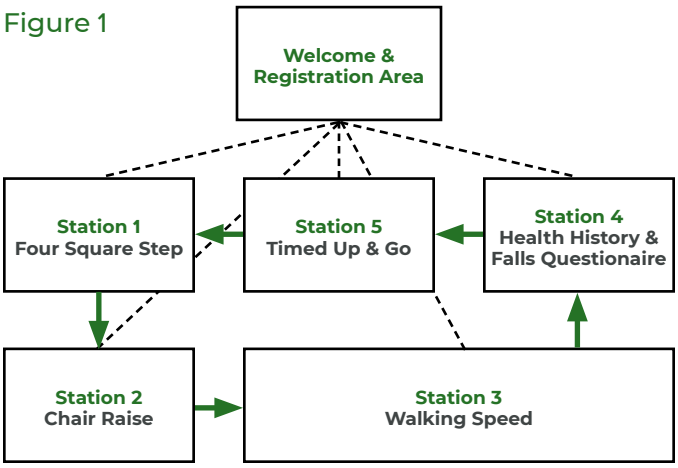
Note: Table columns split to fit on single page; Data in table as example is fictitious

For Community Service and Screening

These measures can also be used in "community service" as screening tools for mobility impairment that threaten an older individual's ability to be active and participate in their communities.[18] Academic programs might consider service learning or integrated clinical experiences using the measures, providing students a positive opportunity to interact with older adults while sharpening their examination skills.[19] If members of clinical practices participate in days of service in their community, a mobility clinic is likely to be well received in senior centers, churches, and in various types of senior housing. If used as a yearly "functional screening" within a facility, a decision would have to be made about "do-able" frequency (yearly, half-yearly, quarterly) for the specific facility.

Organized as a "round-robin" event, participants move through examination stations set up in a large room (Figure 1). After registration, each participant is assigned to one of 5 stations. Allowing approximately five minutes per station, participants move from their first station to the next in line, completing the circuit in 25 minutes. In a 7.5-hour event (allowing 30 minutes for a lunch break) as many as 75 older adults can be assessed. Participants would receive a copy of their performance values, a "fact sheet" with which to interpret their results, and information about nearby practices should they wish to pursue intervention. I have used this strategy as integrated clinical/service-learning events in senior centers, community centers, and senior housing during my long academic career, with very positive feedback from students and the older adults who participated.

Figure 1



Using the Information from the Data Set

Once a data set includes 100 or so patients (large sample sizes help to reduce SEM), it's time to generate descriptive statistics (e.g., mean, standard deviation) specific to the patient population in the facility in which the data was collected. This will provide a snapshot of the facility's patients' characteristics and performance at initial evaluation and at discharge, sorted by age gender, and possibly IDC code (diagnosis). Descriptive statistics are possible on Microsoft Excel or similar spreadsheet programs. Calculation of SEM and subsequently MDD or MCID might require a statistical platform such as IBM SPSS. (Table 4). Partnering with a researcher within the facility or a nearby academic program to do the analysis may be a worthwhile investment.

Table 4 Statistics used to evaluate change in performance.

Statistic		Concept	Formula/ Interpretation
Test-Retest Reliability	r or ICC	Bivariate correlation (agreement) between two test scores	Ideally r > 0.7 or ICC > 0.9
Standard Error of Measurement	SEM	Estimate of measurement error	SEM = s√1-rs= sample size
Minimal Detectable Difference (Change)	MDD or MDC	Estimate of the smallest amount of change that can be detected by a measure that corresponds to a noticeable change in ability	MDD = 1.96 × √2 × SEM
Minimal Clinically Important Difference	MCID	Smallest difference in score that patients perceive as beneficial	Anchor Based: compared to Global Rating of Change Scale scores

In addition to developing better understanding of change in function of a facility's residents, developing a manuscript or presentation proposal to report "typical performance" (see reference 6 as an example) can help to "translate" what has been learned in one facility to similar settings; this could provide an important resource to guide clinical decision making about readiness for discharge, risk of falling, and other key outcomes. Note that secondary analysis of routinely collected data in health care settings is often exempt from Institutional Review Board scrutiny.[20]

The Next Steps

Incorporating these outcome measures into routine practice in as many places as possible provides a solid foundation for developing the "BIG DATA" needed to understand function and mobility of older adults across settings and to eventually approach the Centers for Medicare and Medicaid. There is a great deal of future work to be done. APTA Academy of Geriatrics' Board of Directors is considering a workgroup tasked to explore feasibility of coordination of the project across sites and develop resources and protocols as resources for clinicians. A mechanism to collect the "raw data" from multiple sites will need to be created and managed.

Funding sources to support a larger research project must be identified and applied for. In the meantime, facilities who choose to routinely use these four measures (and perhaps the Global Rating of Change Scale at discharge for MCID calculation) will not only improve outcome measurement but build momentum to this important task!

Unanswered Questions and Limitations

As in any project, there are unknowns that will have to be addressed. How might we handle/document performance if a person is unable to perform one or more of the measures based on weight bearing status or use of a walker (quite difficult during obstacle clearance during the four-square step test), or is unable to rise from a chair without armrests for the Chair Rise or TUG? Will all the recommended measures be "do-able" for individuals with moderate to major cognitive impairment? Feedback from facilities about these issues, and dialogue about practical modifications is as valuable as the raw data for "typical performance will be. Starting such data collection now and sharing information about the experience will help to "fine tune" the protocols for the future!

Let's Get Started

The "start-up" phase of a project such as this is both exciting and intimidating. It would be helpful to keep a list of facilities interested in participating in the early part of whatever APTA Geriatrics might develop; please contact me at mlusardipt@gmail.com if your facility has questions or wants to get involved. (I am a "place keeper" and advisor for information, not a project director). Once we have a cadre of interested sites, an "invited" Facebook page dedicated to the project and/or periodic Zoom meetings might be put into place to connect folks and facilities during start up for support. A proposal for a" how to do this" education session has been submitted for CSM 2024 in Boston. If accepted, it would provide opportunity to summarize feasibility: what has been successful or problematic as the project begins. Thank you for the opportunity to lay groundwork for mobility wellness check!

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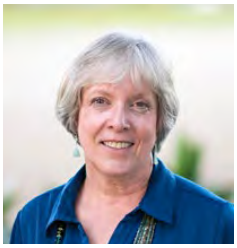

Dr. Lusardi, Professor Emerita from the College of Health Professions, Sacred Heart University, has been actively involved in APTA Geriatrics for 40+ years, serving two terms on the Board, chairing GeriEDGE and the current Task Force on Movement System Diagnoses, and an Editor and Editorial Board Member for the Journal of Geriatric Physical Therapy. She delivered the Carole B. Lewis Lecture at CSM 2023. She and her husband have retired to Pawleys Island SC, where she enjoys the beach and does pro bono community service.

What Ends with the Public Health Emergency?

by Ellen R. Strunk, PT, MS

On January 31, 2020, the Secretary of Health and Human Services (HHS) declared a public health emergency (PHE) for the United States in response to the global outbreak of SARS–CoV–2, a novel (new) coronavirus that causes a disease named "coronavirus disease 2019" (COVID–19). COVID–19 continued to spread domestically and around the world with more than 104.2 million cases and 1.1 million deaths in the United States as of April 9, 2023.[1] In recognition of the ongoing significance and complexity of COVID–19, the Secretary renewed the PHE on April 21, 2020, July 23, 2020, October 2, 2020, January 7, 2021, April 15, 2021, July 19, 2021, October 15, 2021, January 14, 2022, April 12, 2022, July 15, 2022, October 13, 2022, January 11, 2023, and February 9, 2023.[2] And although the Department of Health and Human Services (HHS) announced plans to let the PHE expire on May 11, 2023, the agency stated that the public health response to COVID–19 remains a public health priority with a whole of government approach to combating the virus.

So, here we are. Three years (40 months) after it began, we begin unwinding the rules, regulations, and requirements instituted for the PHE. Many of the requirements were onerous and costly to physical therapy practitioners; many rules relaxed barriers and made it easier to access and to provide physical therapy services. Does that mean that everything goes 'back to the way it was?' Not exactly. This Policy Talk provides an overview of some of the more popular rules and regulations across settings in which PTs and PTAs practice that will be unwinding, and which ones are here to stay.

**The information in this table is meant to serve as a resource only. Therapists should balance the information provided in the table with requirements specific to their setting, their state, and their facility/agency policy.*

Rule, Regulation or Requirement	Who Is Affected	When Is the Change Effective?	What to Watch For
1. Ability to Provide Services using Telehealth PTs and PTAs may bill for services delivered via telehealth under Medicare through 151 days after the PHE ends, which is October 9, 2023.	Providers billing Medicare Part A and Part B services in all settings.	October 9, 2023*	*Although Congress extended that ability to December 31, 2024, in the omnibus spending bill passed in December 2022, CMS has not yet modified their regulations. The first opportunity they have to do this will be in the Physician Fee Schedule (PFS) Proposed Rule for CY 2024 which is usually published in July of each year. The suspense will build into the fall, however, because the PFS final rule is not usually released until the end of October, which would be after the waiver is set to expire.
2. Services that can be Billed when Provided using Telehealth Currently the list of CPT codes PT can bill includes: 97110, 97112, 97116, 97150, 97161, 97162, 97163, 97164, 97530, 97535, 97542, 97750, 97755, 97760, 97761, 97763.	Providers billing Medicare Part B services in all settings.	October 9, 2023*	*This list could change as CMS proposes updates to its policy. The first opportunity they have to do this will be in the Physician Fee Schedule (PFS) Proposed Rule for CY 2024 which is usually published in July of each year.
3. HIPAA Enforcement with Telehealth The U.S. Department of HHS Office for Civil Rights has granted leniency to providers from penalties associated with using patient-communication technologies that aren't compliant with the Health Insurance Portability and Accountability Act of 1996.	Providers billing Medicare Part A and Part B services in all settings.	May 11, 2023	Ensure your technology is HIPAA-compliant. Many popular applications already offer HIPAA business associate agreements, and if you don't have one yet, you should reach out to your vendor. The HHS has a list of applications offering agreements at https://www.hhs.gov/hipaa/for-professionals/special-topics/emergency-preparedness/notification-enforcement-discretion-telehealth/index.html

Rule, Regulation or Requirement	Who Is Affected	When Is the Change Effective?	What to Watch For
4. PTA Supervision Therapists in a private practice or group practice and billing on a professional claim are required to provide direct supervision when PTAs are delivering services to Medicare patients. The PHE allowed for the "direct supervision" to be met using virtual supervision, defined as audio + video supervision.	Providers billing Medicare Part B services in private or group practice.	December 31, 2023	APTA continues to advocate for this waiver to become permanent. However, plan to return to direct (onsite) supervision beginning January 1, 2024.
5. PTAs Providing Maintenance Therapy Prior to the PHE, PTAs were not allowed to deliver maintenance therapy services. This change, however, was made permanent in the CY 2021 Physician Fee Schedule Final Rule.	Providers billing Medicare Part B services in all settings.	Permanent	Not applicable.
6. Medicaid Coverage of Millions of Beneficiaries CMS created PHE-related waivers that allowed more people to receive covered health services during the PHE through Medicaid and the Children's Health Insurance Program (CHIP). With the announcement of the PHE ending, states have 14 months to complete eligibility reviews of their enrollees to determine who is still eligible for coverage.	Providers in every setting who bill Medicaid or CHIP.	May 11, 2023	States may begin disenrolling people starting April 1, 2023. An estimated 15 million people may be affected. Check patients' eligibility status frequently. Talk to your patients. Encourage them to update their contact information with Medicaid agencies, check their mail and response to inquiries quickly. CMS created a handout you can use to talk to your patients: https://www.medicaid.gov/resources-for-states/downloads/medicaid-phe-unwinding-conference-full-page.pdf
7. Onsite Supervisory Visits for Home Health Aides Onsite supervisory visits for direct observation related to training and assessment of home health (HH) aides were relaxed.	Therapists providing HH aide supervision in a HH episode of care.	May 11, 2023	All postponed onsite visits and assessments must be completed by July 10, 2023.
8. Three-Day Qualifying Hospital Stay for SNF Services The requirement of a 3-day/3-night hospital admission in order to qualify for the SNF Part A Extended Care Benefit was waived at the start of the PHE in order to relieve surge stress on hospitals and prevent transfers to hospitals for conditions that could be managed within the SNF.	Therapists working in SNFs.	May 11, 2023	Therapists should resume communication with their admissions team to insure they know whether the patient has met the requirement for a 3-night qualifying hospital stay (QHS). Beneficiaries admitted to a Medicare-covered SNF stay without a QHS on/before May 11, 2023, remain covered under Medicare Part A until they are discharged from skilled services. Beginning May 12, 2023, patients may not access their Medicare Part A SNF benefit without a QHS.
9. Spell of Wellness Waiver The 1812(f) waiver authorized a one-time renewal of SNF coverage without the required 60-day 'wellness period' during which the beneficiary does not receive any SNF-level services.	Therapists working in SNFs.	May 11, 2023	A beneficiary who exhausts their 100-day benefit on or before May 11th, and who have not already utilized this waiver, may qualify for a new benefit period without the required 60-day wellness period. If accessed on or before May 11th, a patient may continue to use the benefit after May 11 until the days exhaust or they no longer meet the requirements for skilled services.

Rule, Regulation or Requirement	Who Is Affected	When Is the Change Effective?	What to Watch For
10. Three-Hour Rule CMS waived the 'intensity of therapy requirement,' commonly called the 'Three-Hour Rule.' This was intended to provide flexibility for IRFs to provide care for patients during the PHE for the COVID-19 pandemic. While IRFs were encouraged to provide appropriate levels of care to all patients, the IRF could not be penalized.	Therapists working in IRFs.	May 11, 2023	IRFs should resume assessing patients' ability to meet the intensity of rehab requirement when conducting pre-admission screenings. Therapists should resume planning for meeting the 3-hour required intensity for patients and tracking those minutes for at least the first two weeks of skilled care.
11. Flexibility Regarding the 60% Rule IRFs must maintain an inpatient population in which 60% of patients have one or more of 13 qualifying conditions to maintain their status as an IRF. CMS has been allowing IRFs to exclude patients from their compliance calculation if they were admitted solely to respond to the PHE and this is documented in the patient's medical record.	Therapists working in IRFs.	May 11, 2023	Beginning May 12, 2023, IRFs will again be required to include all patients admitted to the IRF in their inpatient population for purposes of calculating the applicable thresholds associated with the 60% Rule.
12. Appeals Process CMS has been allowing Medicare Administrative Contractors (MACs) and Qualified Independent Contractors (QICs) in the fee-for-service (FFS) program to process requests for appeal that don't meet the required elements, but instead use information that is available. CMS has also been allowing MACs and QICs in the FFS program to waive requirements for timeliness for requests for additional information to adjudicate appeals and to accept Appointment of Representative (AOR) forms that are incomplete.	Therapists working in all FFS programs.	May 11, 2023	When the COVID-19 PHE ends, requests for appeals must meet the existing regulatory requirements.
13. Revalidation CMS postponed all revalidation actions.	Therapists working in all FFS programs.	October 31, 2023	Be prepared to respond to revalidation notifications timely.
14. Student Documentation During the PHE, CMS relaxed medical record documentation requirements for therapists to allow the billing clinician to review and verify, rather than re-document, information added to the medical record by any member of the health care team, including therapy or other students.	Therapists working in all FFS programs.	Permanent	The CY 2020 Physician Fee Schedule Final Rule adopted a policy to permanently allow this practice.
15. SARS-CoV-2 Testing for Staff and Residents CMS required Long-Term Care Facilities (LTCFs) to test Staff and Residents, including individuals providing services under arrangement and volunteers, for COVID-19.	Therapists working in LTCFs.	May 11, 2024	Not applicable.

Rule, Regulation or Requirement	Who Is Affected	When Is the Change Effective?	What to Watch For
16. Required Facility Reporting of COVID-19 Cases to the CDC National Healthcare Safety Network (NHSN) LTCFs who fail to report may be subject to a civil money penalty for each occurrence of non-reporting as follows: A civil money penalty of $1,000 for the first occurrence, followed by $500 added to the previously imposed civil money penalty for each subsequent occurrence, not to exceed the maximum amount set forth in §488.408(d)(1)(iii). Facilities are also required to notify residents, their representatives, and families of residents in facilities of the status of COVID-19 in the facility, which includes any new cases of COVID-19 as they are identified.	Therapists working in SNFs and LTCFs.	December 31, 2024	Therapists should still report exposure to the SARS-CoV-2 virus as well as infections to their immediate supervisor.
17. PTs Allowed to Perform Initial and Comprehensive Assessment for All Patients CMS has been waiving the requirements in 42 CFR § 484.55(a)(2) and § 484.55(b)(3) that rehabilitation skilled professionals may only perform the initial and comprehensive assessment when only therapy services are ordered. This temporary waiver allowed any rehabilitation professional (OT, PT, or SLP) to perform the initial and comprehensive assessment for all patients receiving therapy services as part of the plan of care, to the extent permitted under state law, regardless of whether nursing services had also been ordered.	Therapists working in HH.	May 11, 2023	The pre-PHE requirements will resume. PTs may perform the initial and comprehensive assessment for patients when skilled therapy is the only service ordered and there are no nursing services ordered.

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2. Administration for Strategic Preparedness & Response. Available at: https://aspr.hhs.gov/legal/PHE/Pages/default.aspx. Acessed April 9, 2023.

Other Resources for the Unwinding of the PHE:

1. CMS Fact Sheet: Physicians and Other Clinicians: CMS Flexibilities to Fight COVID-19. Available at https://www.cms.gov/files/document/physicians-and-other-clinicians-cms-flexibilities-fight-covid-19.pdf.
2. CMS Fact Sheet: Hospitals and CAHs (including Swing Beds, DPUs), ASCs and CMHCs: CMS Flexibilities to Fight COVID-19. Available at https://www.cms.gov/files/document/hospitals-and-cahs-ascs-and-cmhcs-cms-flexibilities-fight-covid-19.pdf.
3. CMS Fact Sheet: Long Term Care Facilities (Skilled Nursing Facilities and/or Nursing Facilities): CMS Flexibilities to Fight COVID-19. Available at https://www.cms.gov/files/document/long-term-care-facilities-cms-flexibilities-fight-covid-19.pdf.
4. CMS Fact Sheet: Home Health Agencies: CMS Flexibilities to Fight COVID-19. Available at https://www.cms.gov/files/document/home-health-agencies-cms-flexibilities-fight-covid-19.pdf.
5. CMS Fact Sheet: Inpatient Rehabilitation Facilities: CMS Flexibilities to Fight COVID-19. Available at https://www.cms.gov/files/document/inpatient-rehabilitation-facilities-cms-flexibilities-fight-covid-19.pdf.
6. CMS Fact Sheet: Long-Term Care Hospitals & Extended Neoplastic Disease Care Hospitals: CMS Flexibilities to Fight COVID-19. Available at https://www.cms.gov/files/document/long-term-care-hospital-extended-neoplastic-disease-care-hospitals-cms-flecibilities-fight-covid-19.pdf.

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National Falls Prevention Awareness Week: Awareness, Preparedness, and Resources, Oh My!

by Heidi Moyer, PT, DPT

Originally created in 2007 and celebrated by only four states, National Falls Prevention Awareness Week (NFPAW) is now an annual, world-wide, week-long event hosted by the National Council on Aging (NCOA). Occurring during the first week of Fall (September 17-23, 2023), this celebration is an opportunity to re-invigorate all members of the interdisciplinary healthcare team to ensure best-practice management for balance and falls conditions in the older adult population. Planning begins months beforehand, and the efforts leave lasting impact on members of the community and healthcare systems.

Community Balance Screenings Events

This is a high-profile way to promote visibility of the role of physical therapy in healthcare and to reach individuals who possibly were not previously aware of our services. This is also the type of effort that most clinicians think of when discussing NFPAW. Many resources exist to support your efforts when creating a Community Balance Screening event.

1. The Centers of Disease Control Stopping Elderly Accidents, Deaths, and Injuries (CDC STEADI) program was published in 2013 and has been widely used in NFPAW events across the country.[1] Originally created for use in primary care physician offices to provide appropriate referral to therapy for patients at risk for falling, this tool has been since adopted by the therapy world itself as a way to provide health promotion and wellness services within their communities. This program has a screening algorithm, making the tool accessible for any provider, not just physical therapy professionals, to use. Also available are educational handouts in multiple languages; more in-depth resources for pharmacy and inpatient settings; and STAND STEADI video testimonials of ways that healthcare systems have successfully integrated this program to promote patient care outcomes. This program is free and open access without use restrictions.
2. APTA Geriatrics BF SIG created a toolkit to help physical therapy providers apply STEADI and other related resources into a comprehensive format to ease implementation. The APTA Geriatrics Falls Prevention Awareness Toolkit was published originally in 2018 and updated in 2020. Free for anyone to download, this toolkit was created as a knowledge translation tool for NFPAW. This "how-to" guide includes everything from recruitment letters, to increased interprofessional collaboration, to a "day-of" flow chart. This toolkit is applicable for individual clinicians or organizations who wish to hold a corporate volunteer event at a local health fair
3. The World Guidelines for Falls Prevention and Management for Older Adults was published in 2022 and offers a culmination of years of research on falls prevention in community dwelling for older adults.[2] Produced through the combined efforts of 96 experts from 36 countries across five continents, the World Guidelines offer a risk stratification algorithm to guide intervention efforts including screening questions supported by past research produce by APTA Geriatrics[3,4] as well as psychometrically supported outcome measures of Timed-Up-and-Go and Gait Speed. Additionally, the guidelines provide recommendations for assessment of various fall risk factors and recommendations for management strategies based on the Modified GRADE system.

Other Efforts Outside of a Balance Event

While community balance events can be amazing opportunities for both healthcare providers and community members, they are not feasible for everyone for time, financial, or resource reasons. As such, there are multiple other ways to participate in NFPAW efforts.

One such way is to provide an in-service to other members of your healthcare team. This is a great way to make sure that everyone is on the same page when it comes to screening, assessment, and intervention practices to help provide consistent care across your company. Additionally, if balance screening is too intimidating, you could give a presentation on falls safety to the community as well. The APTA Geriatrics Falls Prevention Awareness Toolkit has both clinical and community facing presentations that you can use and adapt to the needs of your location. The toolkit also has a list of events that can be held virtually for populations that are high risk and need to attend virtually.

Finally, don't forget about the current opportunity for impact we can have in our existing clinical practice. Are you educating clients on falls risk during "small talk" time? Are you having a heart to heart with people who are middle aged and experiencing an accelerated secondary aging process due to multiple health comorbidities? Making small changes to your clinical practice and

sharpening your skills on balance and falls management once a year is a fabulous way to lead to large scale impact over time. A great way to support this effort with small changes over time is by subscribing to the APTA Geriatrics Monthly Challenge program! On the first of each month, we will send you a blurb on a topic related to balance and falls management in older adults. We have covered topics from pet safety to floor transfer training. If you'd like to receive this mailer, please reach out to us at agptbalanceandfallssig@gmail.com and ask to join the Monthly Challenge!

What About Non-Community Dwelling Adults?

While this comprehensive list of NFPAW events sounds exhilarating, it only represents community dwelling older adults. What about individuals in supportive living environments such as skilled nursing or assisted living? Those experiencing medical complexity? Unfortunately, research related to balance and falls management in medically complex populations is severely lacking. This does not mean, however, that we cannot be effective within this population. Coined affectionately as the "Balance and Falls Tri-Alliance", the APTA Geriatrics BF SIG presented alongside the BF SIG chairs of the Academy of Neurologic Physical Therapy (ANPT) (Debbie Espy) and APTA Oncology (Rachel Hac) at CSM 2023 on balance and falls management in populations experiencing medical complexity.

During this presentation, APTA Geriatrics spoke on balance and falls management in individuals experiencing frailty and deconditioning while APTA Oncology provided information on balance and falls management in cancer survivors related to chemotherapy-induced peripheral neuropathy (CIPN) and ANPT provided insight into the variation of balance management across progressive vs. acute neurologic pathologies as well as the role of their Intensity Matters campaign in relation to balance training. More information related to this topic will be forthcoming from the "Tri-Alliance" in 2024.

Upcoming Resources

Other resources are currently in production to support NFPAW. Anticipated for publication in 2023, the long-awaited Clinical Practice Guideline (CPG) for Falls in Community Dwelling Older Adults by physical therapists Timothy Hanke, Keith Avin, Christine McDonough, Neva Kirk-Sanchez, and Jennifer Blackwood is nearing dissemination. This team presented on their findings thus far at CSM 2023 in San Diego to a packed room and were able to highlight their main findings of the importance of education, multifactorial assessment, and multi-modal exercise including perturbation training. This CPG will be vital for standardizing an approach to balance and falls management in community dwelling older adults.

The APTA Geriatrics BF SIG also has several new resources in the works for their members. First, our Annual NFPAW Kick Off Call will occur at 7pm Central Time Zone on June 6, 2023. This event is a great way to get energized by others to start planning NFPAW 2023 events. Second, we are in the process of producing 2 toolkits related to fall prevention. Anticipated in June 2023 is the NFPAW Multi-Specialty Toolkit which highlights the important roles that traditionally "non-geriatric" specialties and settings can play in NFPAW. Anticipated in late 2023 is the Balance and Falls Management in Older Adults with Neurologic Diagnoses which will highlight balance and falls evidence in older adults with stroke, traumatic brain injury, and Parkinson's Disease.

Beyond September...

NFPAW isn't at a convenient time for everyone. Fall can be a very busy time and not always the opportune timing for holding large scale events or efforts such as those mentioned in this article. That doesn't mean you cannot still participate in balance and falls events! NFPAW might be a vibe in September, but fall prevention should happen 365 days a year, not just 7. The time of year of the event only matters if it is convenient for you and your community. If winter or spring yields a better return on your time investment in terms of volunteers or participants, then go for it! After all, fall prevention is a lifestyle, not a fashion trend.

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4. Avin KG, Hanke TA, Kirk-Sanchez N, McDonough CM, Shubert TE, Hardage J, et al. Management of falls in community-dwelling older adults: clinical guidance statement from the Academy of Geriatric Physical Therapy of the American Physical Therapy Association. *Phys Ther.* 2015;95(6):815-834.

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Why is a Simple PT Exercise so Hard?

Download the Cognitive and Mental Health (CMH) Toolkit

by Christine Childers, PT, PhD; Rashelle Hoffman, PT, DPT, PhD; Samantha Laswell, PTA; and Christine Ross, PT, DPT

Do you have clients that appear to be struggling with something that should be easy — tying shoelaces, finding words, missing appointments, unpredictable changes in emotions? While aging and dementia may cause these changes in the older adult, younger individuals post COVID are also struggling.

In 2021 members of the Cognitive and Mental Health Special Interest Group (CMHSIG) realized there was a need to provide clinicians with quick screening tools for individuals demonstrating cognitive deficits. The primary rationale behind the project was the need to increase awareness of cognitive challenges that might be present in otherwise healthy appearing individuals post COVID or with long covid. In addition, it is anticipated that the number of US citizens with Alzheimer's disease and other cognitive challenges will more than double by 2050. The need for an uncomplicated screening system readily applicable across physical therapy settings was realized along with recognition that a simplified toolkit could be developed. This toolkit was finalized in late 2022 and is now available through the APTA Geriatrics, free of charge to download for anyone interested in knowing more about this very challenging topic. No academy or APTA membership is required. https://aptageriatrics.org/sig/cognitive-and-mental-health-toolkit/

The toolkit is presented in 6 sections that guide a clinician through the process: screening procedures, explaining the cognitive domains, and identifying those most affected by a specific diagnosis.This is followed by screening tools for each domain, recommendations for treatment adaptation, and finally current recommendations for promoting cognitive health. Tests and recommendations within the toolkit were intentionally focused on open domain measures to maximize user friendliness and easy therapist access; tools are not ranked. This is not a reflection about the integrity, utility, validity, or reliability of proprietary tools, some of which [but not exhaustively] are mentioned within the toolkit. The CMHSIG Chair, Alex Alexander, PT, DPT, GCS, welcomes your questions and feedback. (cognitiveandmentalhealthsig@gmail.com)

Positive Transitions: The Role of Working Memory and Cognition on Intervention

by Michael McGregor, PT, DPT and Jessica Dunn, PT, DPT

For older adults, cognition should be considered a "vital sign"; [1] a measurement of basic functions that are vital for healthy living. Cognition is essential for performance, the center of all functional tasks. It consists of multiple domains, including attention, memory (e.g., remembering to take medications, remembering a doctor appointment), and executive functions (e.g., judgment, problem-solving, reasoning). Impairments in memory and/or the other domains make it very difficult to function safely at home.

Let's take a moment to review the case study from the *previous (March 2023 issue) article.*[2]

"Mrs. Smith is a 72-year-old woman referred to physical therapy by her primary care physician. She has a history of falls and a diagnosis of Mild Cognitive Impairment (MCI), Hypertension, Arthritis, and Coronary Artery Disease. She lives alone and recently lost her husband of 40 years. Her family reports she has difficulty with adhering to her medication management routine and has compromised decision-making skills and forgetfulness. Her primary goals for PT include remaining in her home, caring for her garden, and continuing to take care of her dog, Skittles.

Upon initial evaluation, the PT notes that Mrs. Smith has limited range of motion in her hips and knees, in addition to gait, strength, and balance impairments. Objective tests and measures from evaluation include; TUG – 18 seconds, 30-Second Chair Rise – 12, 4 Stage Balance Test – unable to hold tandem stance greater than 10 seconds. She also has difficulty following lengthy and complex verbal instructions and remembering all of the exercises she was asked to complete.

The Brief Cognitive Assessment Tool- Short Form (BCAT®-SF)[3,4,5] was administered to Mrs. Smith and the results indicated a score of 17 / 21. This score was consistent with MCI, and the PT was able to use the patient level online test report measures including the overall score as well as the Contextual Memory Factor Score to inform the plan of care."

When creating a PT plan of care for Mrs. Smith, her cognitive status, specific needs and abilities, fall risk, and personal goals are important to consider. Goal areas may include:

- Improving range of motion in hips and knees,
- Increasing strength and balance,
- Addressing fall risk factors,
- Strategies to improve medication management adherence,
- Enhancing decision-making skills and memory,
- Increasing independence and ability to care for garden and dog.

Dual-task exercises that combine physical and cognitive tasks simultaneously are frequently performed during activities of daily living (ADLs) and functional

Crosswalk of Cognitive Levels to Probable Placement and Care Needs The BCAT®-SF can be used to guide placement and care. The Table presents general guidelines, based on the best science available. Ratings are based on cognitive functioning, not physical capabilities..

BCAT®-SF Score Range	0-8	9-15	16-18	19-21
Cognitive Level	Severe Dementia	Mild-Moderate Dementia	Mild Cognitive Impairment	Normal Cognition
Probable Placement	Memory Care	AL with Support	IL/AL	IL
Medications Support	Yes	Yes	Yes/No	No
Simple Meal Prep	Yes	Yes/No	No	No
Dining Support	Yes	Yes	Yes/No	No
Transportation Support	Yes	Yes	Yes/No	No
Appointments Support	Yes	Yes	Yes/No	No
Laundry	Yes	Yes	Yes/No	No
Escort to Meals	Yes	No	No	No
Activites Participation w/ Support	Yes	No	No	No

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activities. Cognitive and decision-making exercises that focus on working memory (WM) and improving brain health can be implemented during PT intervention sessions to improve one's abilities during common functional tasks. Addressing the cognitive and physical component of tasks at the right intensity, can dramatically improve client performance.

WM and the Plan of Care

Working memory (WM) consists of two primary components, attentional capacity, and task manipulation. These skills combine and serve as "cognitive workspace" where people temporarily store information heard, seen, or felt in order to do something with it.

WM is often measured in time and the amount of information processed. In healthy adults, working memory is typically 15-30 seconds. For persons living with MCI and/or dementia, the ability to attend and act upon information is often much shorter.[6]

WM is a critical skill which supports;

- Planning and executing daily routine: WM helps people plan and organize their day, remembering specific exercises and activities that need to be performed, as well as the order in which they should be performed.
- Multi-tasking: Multiple tasks must be juggled at once, such as scanning the environment and going up a curb or maneuvering their phone while walking. WM includes the ability to maintain and divide attention to targeted tasks.
- Communicating: WM supports effective communication with spouse, family/friends, and community. The ability to process complex information and to ask relevant questions are essential components to making informed decisions about one's own health and wellbeing.
- Adapting to new situations: Adequate memory skills allow generalization and carryover, skills necessary to adapt to new situations.
- Improving retention and recall: WM skills are the basis for retaining information and recalling exercises and movements they have learned in therapy sessions.[7]

Strategies to help Mrs. Smith with WM impairments and how to navigate her home hazards could include:

- Simplify her environment by reducing clutter and the number of potential hazards.
- Create checklists of potential hazards and safety precautions to remember.
- Practice hazard recognition and response skills through role-playing or simulated scenarios to improve her WM and response times.
- Consider the use of assistive devices to enhance mobility while in the home and community.
- Provide frequent verbal or written reminders of potential hazards and safety precautions.

WM and Dual-Tasking

WM also supports dual tasking, the ability to perform two or more tasks simultaneously. Dual- tasking requires the use of WM to maintain attention skills to keep track of and switch between different tasks, and to coordinate the information and actions required for each task.

WM is involved in several aspects of dual-tasking such as:

- Holding and maintaining information in an active state for one task while performing another task.
- Monitoring and controlling cognitive processes, such as shifting attention between different tasks and coordinating the information and actions required for each task.
- Multitasking, such as walking while talking, driving while using a GPS, all require the use of WM to coordinate the different actions and information.

Research has shown that older adults with poor WM have more difficulty with dual tasking than those with better WM.[8] Dual-tasking, especially tasks that require attention and memory, become more difficult as WM declines. This can lead to an increased risk of falls, accidents, and other safety concerns.

PT interventions such as exercise and cognitive-motor training may have some benefits for dual-tasking. Exercise, specifically aerobic capacity training, can help to improve blood flow to the brain, which can help to improve cognitive function and may improve dual-tasking ability. Cognitive-motor training exercises can improve cognitive and motor function, by challenging the client's attention, memory, and executive function while performing physical tasks.[7]

When working with Mrs. Smith, these skills can be practiced through a variety of activities, such as having Mrs. Smith walk her dog Skittles and walk and talk on the cell phone. These challenges may be dosed at an easier intensity during earlier sessions such as minimizing distractions and reducing environmental distractions including noise and complex visual stimuli. Intensity of dual-tasking complexity may be increased over time so that the person will be able to plan, anticipate potential hazards or distractions, prepare, and adjust behaviors accordingly.

Attention, Memory, and Executive Function

The PT should consider how additional cognitive domains may impact the design of the plan of care for Mrs. Smith. Attention, memory, and executive function are all important cognitive skills that can impact a person's ability to participate in PT interventions and make progress towards their goals.

Attention

Attention is an important cognitive skill that plays a significant role in fall risk for older adults. Attention deficits can lead to a decreased ability to focus on the task at hand, leading to increased distractibility and difficulty maintaining balance and stability. In addition, older adults who have attention deficits may also struggle with managing the cognitive load, or the amount of mental effort required to complete a task. Activities that require high levels of cognitive load, such as navigating a new environment or learning a new exercise, may be particularly challenging for older adults with attention deficits and can increase their fall risk.

See table #1 for sample strategies to support attention deficits.

Memory

Memory impairments can impact the ability to remember important information related to managing health conditions. This deficit area may result in challenges with remembering to follow safety precautions when using a mobility device which can impact fall risk. Memory deficits can make it challenging to follow a medication schedule and complete basic ADLs.

See table #2 for sample strategies to support memory deficits.

Table 1. Attention Deficits and Strategies

Types of Attention	Description	Strategies to Support Attention Deficits
Focused attention:	Focus on visual stimulus such as a photo or auditory (hearing) information.	**Simplify instructions** and break down tasks into smaller, more manageable steps.
Shifting Attention:	Begin one task and then stop to shift your focus on another task.	**Use visual cues** or demonstrations to supplement verbal instructions.
Sustained Attention:	Attend and focus on a task for a continuous amount of time (attention need to complete an ADL).	**Provide frequent feedback** and reinforcement to keep the patient engaged and motivated.
Selective Attention:	Attend to one specific task while filtering out other distractions around you.	**Use multisensory** approaches to engage multiple senses and facilitate attention and learning.
Divided Attention:	Multi-task focusing only a part of your attention on multiple items at the same time.	**Incorporate cognitive strategies** such as working memory training or mindfulness techniques to help improve attention and focus.

Table 2. Types of Memory and Strategies to Improve Recall

<table>
<tr><th colspan="2">Memory</th></tr>
<tr><td>Memory impacts a person's ability to perform almost any activity. Memory is how "knowledge is encoded, stored, and later retrieved."</td><td>Encoding: Newly learned information is attended to and processed
Consolidating: Making the newly acquired information more stable in memory; the more effort (rehearsal, reciting, repetition) the more consolidating
Storing: Memory is retained over time
Retrieving: Processes that permit the recall & use of stored information</td></tr>
<tr><th>Short-term Memory</th><th>Long-term Memory</th></tr>
<tr><td>Retaining information temporarily</td><td>Information that can be recalled years later</td></tr>
<tr><td rowspan="2">Immediate recall: Information that can be recalled immediately after it has been presented.</td><td>Episodic: Ability to recall personal experiences related to a specific time & place. Answering a question such as: "Did you ever take dance lessons?"</td></tr>
<tr><td>Semantic: Ability to recall factual information & general knowledge about the world that has been built up through associations over time; "how many states are in the United States"; "what is the capital of New Jersey".</td></tr>
<tr><td>Working memory: Information that can be rehearsed & retained for several minutes.</td><td>Procedural: Ability to recall skills & procedures; usually preserved for the longest amount of time; brushing one's teeth</td></tr>
<tr><th colspan="2">Strategies to Support Recall</th></tr>
<tr><td colspan="2">Repetition: Repeating exercises or motor tasks can help consolidate memories and improve retention.
Associative learning: Linking new information to previously learned information or personal experiences can facilitate memory encoding and retrieval.
Mnemonics: Using memory aids such as acronyms or imagery can help facilitate memory retrieval.
External aids: Using external aids such as written or pictorial instructions, videos, or visual cues can help support memory retrieval.
Errorless learning: Providing step-by-step instructions or cues to prevent errors can help prevent negative reinforcement and improve retention.</td></tr>
</table>

Executive function

Executive function is a set of cognitive skills that allow individuals to plan, organize, and execute tasks. Executive function deficits can alter an older adult's ability to complete tasks that can directly impact fall risk, such as maintaining balance and avoiding hazards in their environment. People who have difficulty with planning and organization skills may have difficulty identifying and prioritizing fall prevention strategies. They may struggle with creating a fall prevention plan that is specific to their needs, such as incorporating exercises and modifications that address their individual risk factors.

See table #3 for sample strategies for executive function deficits.

The Role of Cognition on Intervention

The FITT principle is a guideline for designing an exercise program that stands for frequency, intensity, time, and type. It is used to help individuals create an exercise program that is safe, effective, and tailored to the specific needs and goals of the client. When properly applied, FITT enables patients to make significant progress while allowing therapists to adjust the exercise program to ensure safety and effectiveness.

(See Cognitive Impairments and Exercise Considerations Table #4).

Cognitive Impairment and Exercise Considerations

Research has shown that the intensity of exercise can impact the cognitive function in individuals with cognitive impairment.[9, 10] Some evidence-based opportunities to leverage exercise intensity and its impact with this population:

- Low to moderate intensity exercise, such as walking or cycling at a moderate pace, has been shown to improve cognitive function in individuals with cognitive impairment.[11] This type of exercise can improve cardiovascular function, which in turn can

Table 3. Types of Executive Function and Strategies to Support Deficits

Executive Function is an umbrella term that refers to the coordination of several cognitive processes working together to complete a task. Executive function includes the ability to initiate a task, problem solve, plan, sequence, maintain the task before discontinuing the targeted task all while shifting from one area to the other.

Types of Executive Function	Description	Strategies to Executive Function Deficits
Problem Solving	The process of finding solutions to difficult or complex issues.	**Planning and organization:** Breaking down complex tasks into smaller, more manageable steps and providing written or pictorial instructions to help the patient organize and plan their actions. **Feedback and monitoring:** Providing ongoing feedback and reinforcement to help the patient monitor their progress and adjust their behavior accordingly. **Time management:** Teaching the patient effective time management strategies, such as prioritization and scheduling, to help them allocate their time and resources effectively. **Metacognitive strategies:** Using metacognitive strategies such as self-monitoring, self-reflection, and self-regulation to help the patient become more aware of their cognitive processes and learn how to manage them more effectively.
Reasoning	The action of thinking about something in a logical, sensible way.	
Practical Judgment	The application of knowledge and skills necessary to safely and successfully perform critical activities of daily living	
Abstract Thinking	The ability to understand a concept that is real but that is not directly tied to a physical object or experience, i.e., humor.	
Set-Shifting	The ability to unconsciously shift attention between one task and another which allows an individual to adapt to different situations quickly and efficiently.	
Judgment	The ability to carefully evaluate situations, consider possible outcomes and use the available information to make appropriate decisions.	
Safety Awareness	The ability to recognize hazards and show a willingness to act to control the situations.	

Table 4. Cognitive Impairments and Exercise Considerations

Cognitive Challenges	Frequency	Intensity	Time	Type
Difficulty executing the exercise. Difficulty following directions. Difficulty remembering the exercise. Difficulty paying attention during the session.	Consider primary impairment, Repetition is key- 3x per week may allow for increased carryover from one session to the next. Clients may benefit from 3x week for 8-12 weeks followed by a gradual decrease in session frequency/ week to assess the client's ability to return demonstrate exercise program and safe participation in activities of daily living and all targeted goal areas. For example, Mrs. Smith may be seen by PT 3x week x10 weeks; 2 x/week x2 weeks; 1x/ week x 2 weeks.	Regardless of the type of exercise, intensity must be dosed appropriately to get results. Intentional underdosing may need to occur during sessions 1-3 to promote client participation and buy in to the program. Aerobic intensity must be determined via vital sign assessment at rest and after activity; resistance training intensity must be assessed via amount of weight lifted (including body weight) and repetitions. Flexibility exercises: 2-3x per week 10-30 second holds; 2-4x reps.	Ask the client when are they best able to pay attention- are they a morning or evening person? Consider the underlying impairment and amount of activity necessary to dose for change. Monitor for signs of cognitive fatigue which may include increased distractibility, irritability, disengagement. Break activities into small manageable blocks of time; be ready to transition to the next activity if something is too challenging. Word spaced retrieval and errorless learning strategies. Provide the client consistent step by step instructions to enhance performance.	Consider primary impairment- aerobic, strength deficit, balance impairment-. Activities should be familiar, functional, something the client enjoys. Structure each session in a similar format: warm-up, aerobic training, resistive training, balance/fall prevention strategies, cool-down/client education. Sessions should be performed in a familiar environment, written instructions with pictures or video demonstrations should be provided to client to assist with carryover. Including client's caregiver/family will help with education carryover.

improve blood flow to the brain and enhance brain plasticity. These changes can lead to improvements in attention, executive function, and memory.
- High-intensity interval training (HIIT) has also been shown to improve cognitive function in individuals with cognitive impairment.[9, 12] HIIT involves short bursts of intense exercise followed by periods of rest or low-intensity exercise. This type of exercise can improve cardiovascular function, brain plasticity, and cognitive function. High-intensity exercise may not be appropriate for individuals with certain medical conditions or mobility issues.

The Role of Brain Health and Cognition

Cognitive impairments can have a significant impact on ability to perform ADLs, such as bathing, dressing, and preparing meals. In addition, individuals with cognitive impairment slowly lose the ability to engage in social activities, hobbies, and other meaningful pursuits. By preserving brain health, individuals can maintain their ability to participate in these activities and continue to enjoy a high quality of life. This is especially important for older adults with cognitive impairments, such as MCI, who may be at increased risk for developing dementia. Brain health interventions, such as lifestyle modifications, cognitive stimulation, and appropriate medical interventions, can help prevent or slow the onset of cognitive decline. Let's take a moment to dive into some lifestyle modifications that could have a huge impact on Mrs. Smith.

Diet and Nutrition

Nutrition, a critical aspect of brain health, plays an important role in physical therapy. The brain and body require nutrients to reduce inflammation and to promote healing and circulation. According to *The Role of the Physical Therapist and the American Physical Therapy Association in Diet and Nutrician HOD P06-19-08-44,*[13] "Diet and nutrition are key components of primary, secondary, and tertiary prevention of many conditions managed by physical therapists. It is within the professional scope of physical therapist practice to screen for and provide information on diet and nutritional issues to patients, clients, and the community." PTs in consultation or with the co-management of a registered dietitian can help provide guidance on nutritional choices that will support the patient's health.

Having a conversation with Mrs. Smith regarding her diet and hydration may identify opportunities for her to make lifestyle choices that can better support her overall health and wellbeing.

Sleep Health

Sleep is essential for good brain health and physical well-being. Increasing amounts of evidence demonstrate that chronic insufficient sleep contributes to the development of many health problems, including hypertension, cardiovascular disease, obesity, depression, and diabetes and is associated with increased risk of accidents, injuries and falls, dementia, and increased mortality.[14]

According to *The Role of the Physical Therapist and the American Physical Therapy Association in Sleep Health HOD P06-20-39-09 [Position]*[15], "Physical therapists are part of an interdisciplinary team of licensed health services providers in prevention and management of sleep impairments and promotion of healthy sleep behaviors." PTs can help screen for sleep dysfunction, implement therapeutic interventions to address impairments that affect sleep quality, educate patients and caregivers regarding the relationship between sleep, pain, physical activity, health, and well-being. If an issue is identified, PTs would refer to a sleep medicine professional to address the issue.

Sleep is important for brain health as it can improve memory consolidation, cognitive repair, tissue repair, and mood regulation.

Mental Health Screening

Mental health screening is an essential aspect of healthcare that is often overlooked. According to *The Role of the Physical Therapist and the American Physical Therapy Association in Behavioral and Mental Health HOD P06-20-40-10 [Position]*[16], "Physical, behavioral, and mental health are inseparably interconnected within overall health and well-being. It is within the professional scope of physical therapist practice to screen for and address behavioral and mental health conditions in patients, clients, and populations." Mental health screening has been shown to reduce risk of cognitive decline, improve social connections, lead to better quality of life, and can enhance resilience.[17] If an issue is identified, a referral to the most appropriate healthcare professional to support the prevention and management of the behavioral and/or mental health condition is necessary.

Screening Mrs. Smith for potential sleep disturbances as well as her current mental health, provides the PT with important information that can be used to make referrals to other healthcare professionals.

The Role of Interprofessional collaboration

Patient management is a primary role of a PT. This role can be particularly challenging when working with an individual with cognitive impairments. Individuals with cognitive decline may have deficit areas that fall outside the scope of practice for PTs. As healthcare practitioners that have the ability to work with individuals over a number of sessions and have the opportunity to conduct visits in the home environment, PTs have the unique opportunity to collaborate with the interprofessional team to address the patient's needs holistically.

Collaboration with the physician/nursing/team

Physical therapists do a thorough review of the patient's past medical history, current history of present illness, and review the patient's current medication list as a part of a comprehensive examination. Situations may arise when a new concern is identified or change in medical status may be suspected. It is important that the PT reports this information to the medical team to support the most appropriate course of treatment.

Performing a medication review can generate important conversation regarding the person's understanding of their medications, schedule adherence, and overall effectiveness. Referral to the medical team would be warranted when the patient reports altering the medication schedule, no benefit from the prescribed medication, or the person is taking medication without a corresponding medical diagnosis. American Geriatrics Society Beers criteria is a list of medications which are commonly prescribed and should be avoided when treating older adults.[18] The Beers list considers a number of factors, including the medication's potential side effects, interactions with other medications, and the individual's cognitive and physical status. By avoiding medications that may exacerbate cognitive decline, healthcare providers can help improve the quality of life for older adults and reduce the risk of adverse drug reactions.

Collaboration with the Occupational Therapist (OT)

Occupational therapy can play an important role in addressing cognitive impairment and improving functional abilities for individuals with cognitive deficits. In addition to cognitive rehabilitation, OTs may also focus on improving functional abilities, such as self-care, home management, and community participation. One example is their role in addressing cognitive deficits related to driving for individuals with cognitive impairments.

Deficits affecting memory and attention can impact reaction times and a person's ability to drive safely. OTs can evaluate an individual's cognitive abilities related to driving and develop personalized interventions to address these deficits. Interventions may include cognitive rehabilitation exercises, training in the use of memory aids or other compensatory strategies, and practice driving sessions. OTs may also work with patients and caregivers to help them recognize warning signs of unsafe driving. This can include education on monitoring changes in cognitive functioning, identifying behaviors that may indicate unsafe driving practices, and facilitating discussions about driving safety.[19]

Based on Mrs. Smith's clinical presentation, PT may make a referral to OT to assess her ability to drive and navigate in the community.

Collaboration with the Speech Language Pathologist (SLP)

Partnering with a SLP that specializes in addressing how cognitive impairments influence one's ability to communicate and participate in ADLs is essential. Not only can SLPs work directly with clients to improve cognition, but PTs can benefit from their knowledge and expertise. SLPs can assess an individual's cognitive abilities related to communication, such as ability to understand and use language effectively and develop personalized interventions to address any deficits. Besides language, speech therapists specialize in identifying how mental manipulation, verbal and visual reasoning, problem solving, analyzing one's logical reasoning, and thinking skills are related to functional abilities. SLPs can also analyze how divided/dual tasks and how immediate recall, long term recall, procedural, episode, and semantic memory affect function.

Mrs. Smith may benefit from a comprehensive speech language pathology evaluation to determine which areas of cognition and processing are directly affected. In addition, the SLP can make recommendations on how to remediate or compensate for deficit areas.[20]

Cognition and Rehospitalization Risk

Hospital readmissions for individuals with cognitive deficits are more common than for those without impairments. Individuals with cognitive impairments are more likely to be readmitted to the hospital due to a fall, health literacy challenges managing chronic conditions, or an inability to adhere to their medication schedule.[21] Ensuring good interprofessional collaboration with the patient and family can help decrease the risk for readmission. It is imperative that cognitive deficits are fully assessed so that a comprehensive plan can be put in place to ensure a smooth transition from one setting to the next.

The Role of Cognition in Aging in Place and Preventing Future Falls

It is common for older adults to identify that aging in place is a primary concern. Aging in place refers to the ability of an older adult to live independently and safely in their home as long as possible. Accurately assessing cognition and involving the most appropriate team members to address deficit areas can help create an individualized plan that addresses the person's specific needs. Cognitive status can change over time, so it is important that team members reassess cognitive abilities over time. The interprofessional team will need to make decisions on how to best support the patient's goals through remediation or compensation.

Falls preparedness and risk management is important to help people age in place. Falls are one of the primary reasons older adults end up having to leave their homes and require assistance with ADLs.[22] Performing a comprehensive falls risk assessment that includes medical, functional, environmental, and cognitive assessment can help identify modifiable risk factors.[23] Addressing specific impairments such as balance, strength, and mobility deficits is an important part of a falls risk management program. Patient education regarding fall preparedness can help an older adult consider how to position their body to minimize injury if they should fall. Teaching individuals how to get up from the floor is also a necessary component of the plan of care. Environmental modifications, such as installing grab bars in the bathroom or improving lighting in the home, can improve safety and accessibility. Assistive technology, such as medication reminders or emergency response systems, can also help older adults manage their health and safety more effectively.

In summary, cognition plays a critical role in client assessment and intervention strategies. Understanding the role of each interprofessional team member and how each member can address cognitive deficits enhances the team's ability to safely manage the person's plan of care. People ultimately thrive when each team member assesses cognition and leverages each team members' expertise to create a plan that enables the individual's functional abilities.

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The President's Council on Sports Fitness and Nutrition and Physical Therapy, Part 1: What's the Connection?

by Jacqueline Osborne, PT, DPT

Physical therapists are aware of the challenges related to prescribing properly dosed exercise and promoting sustainable physical activity as we work to serve older adults in the current health care climate. Many organizations, including the federal government have enlisted the expertise of individuals across health care professions to organize data, create recommendations, and build policy surrounding the value of physical activity engagement for population health. Physical therapists are well educated to be an integral part of these efforts but are present for these efforts in low numbers. I recently had the opportunity to serve on the 2022 Science Board, a subcommittee of the President's Council on Sports, Fitness and Nutrition. As a part of this group, I realized how much opportunity our profession must infiltrate these organizations and share our knowledge of rehabilitation and health to inform prevention and wellness for the population at large.

The Historical Perspective

The President's Council on Sports Fitness and Nutrition (PCSFN) is a federal advisory committee and was established in 1956 through an Executive Order by President Dwight D. Eisenhower as the President's Council on Youth Fitness. The Council evolved over 13 presidential administrations and became known by its current name in 2010 under the direction of President Barack Obama. The Council's role is to promote programs and initiatives that motivate people of all ages, backgrounds, and abilities, to lead active, healthy lives.[1] The Council is led by the Office of Disease Prevention and Health Promotion (ODPHP) under the Department of Health and Human Services (HHS) and includes 30 members appointed by the President of the United States. The Council includes executives from business, education, and non-profit organizations. The Council has historically included many influential figures and athletes such as astronaut Jim Lovell, professional baseball player Hank Aaron, celebrity and former Governor of California Arnold Schwarzenegger, professional tennis player Christine Evert, Olympic athlete Florence Griffith Joyner, Olympic gymnast Dominque Dawes, Olympic figure skater/current U.S. Ambassador to Belize Michelle Kwan, professional football player Drew Brees, and Food Network TV personality Rachael Ray. Current Council members include professional football player Herschel Walker, professional beach volleyball player Misty May-Treanor, chef and culinary innovator, José Andrés, and professional basketball player and Olympic athlete Elena Delle Donne.[2]

In 2003 the Science Board was established as a subcommittee of the Council to bring the best available evidence to the Council based on its appointed members' scholarly qualifications and contributions to the science of physical activity, fitness, health, sports, and nutrition.[3] The Science Board is collectively charged with supporting the implementation of specific health-related initiatives and developing science-based reports.

Physical Activity Guidelines (PAGs) - 1st and and editions

In 2008 the ODPHP released the first edition of The Physical Activity Guidelines for Americans.[4] This document was positioned as the primary source of information for policy makers, physical educators, health providers, and the public on the amount, types, and intensity of physical activity needed to achieve many health benefits for Americans across the life span. Recommendations specific to older adults include:

- Engage in at least 150 minutes of moderate-intensity or 75 minutes of vigorous-intensity (or equivalent combination) of aerobic activity per week.
- Perform aerobic activity in bouts of at least 10 minutes.
- Engage in muscle strengthening activities of moderate to high intensity for all major muscle groups at least 2 days per week.
- Engage in balance exercises if at risk of falling.
- If limited by a chronic condition, be as physically active as the condition allows.
- Determine the level of effort for physical activity relative to the level of fitness.
- Understand whether and how health conditions affect the ability to engage in regular physical activity safely.

There is not a congressional mandate to update the Physical Activity Guidelines on a regular basis. Since the 2008 Guidelines were established, stakeholders encouraged HHS and the ODPHP to support regularly published updates to the Guidelines on a scheduled basis. Five

years after the 2008 PAGs were published, a subcommittee similar to the Science Board was appointed to develop a midcourse report to scientifically explore intervention strategies found to increase physical activity levels among America's youth (ages 3-17): Physical Activity Guidelines for Americans Midcourse Report: Strategies to Increase Physical Activity Among Youth.[5] Five years later in 2018 the ODPHP collaborated with the Centers for Disease Control and Prevention (CDC), the National Institutes of Health (NIH), and the PCSFN to develop the 2nd edition of the Physical Activity Guidelines for Americans.[6] Additions to the 2nd edition specific to older adults:

- The removal of the recommendation that a bout of exercise should be at least 10 minutes.
- The addition of promoting any amount of physical activity as beneficial for some aspect of health.
- The benefits of a single bout of activity on physiologic measures of health status such as blood pressure and insulin sensitivity.
- The benefits of physical activity on pain related to osteoarthritis, the symptoms of anxiety and depression, improved cognition in those with dementia, and other neurologic diseases such as multiple sclerosis and Parkinson disease.
- The longer-term benefits of physical activity on overall brain health, cancer risk reduction, and reduced risk of fall-related injuries.

The basic science that informs recommendations for specific parameters of physical activity engagement such as exercise type, intensity, frequency, and duration have not changed. Also unchanged is the abundant, unequivocal evidence that movement is beneficial to improve health status at the cellular, tissue, system, and functional levels. Although Chapter 8 of the 1st edition and Chapter 11 of the 2nd edition give suggestions on *how* older adults can adopt an active lifestyle, what is lacking are evidence-based suggestions for which evidence-based interventions have been shown to change behavior both at the individual level and at the community level. In other words, despite knowledge of the needed amount of physical activity to make a change in health status, behaviors are not changing. Despite the many benefits of physical activity for older adults, only 13.9% of adults over age 65 in the United States meet aerobic and muscle-strengthening key guidelines.[7] Therefore, in collaboration with the ODPHP, CDC, and NIH, the 2022 PCSFN Science Board was appointed to conduct a systematic literature review to inform the development of the Physical Activity Guideline Midcourse Report on Older Adults (not yet publicly available). Evidence reviewed for inclusion in the midcourse report are related to the following:

Highlight key components of effective intervention strategies to increase physical activity levels among older adults.

- Identify settings where physical activity messaging and encouragement would be relevant to older adults.
- Highlight policy, systems, and environmental interventions particularly important to this population to increase physical activity.
- Summarize effective strategies to overcome barriers and limitations to implementing the above interventions, including:
  - Emphasis on equity and reduction of disparities in participation among individuals with disabilities and individuals of racial and ethnic groups.
  - Highlight strategies to bolster mental health, build resilience, and enhance social connectedness.
- Highlight policy, systems, and environmental (PSE) strategies to increase physical activity among older adults.

Call to Action

The Physical Activity Guidelines Midcourse Report: Implementation Strategies for Older Adults is due to launch publicly through the ODPHP in May 2023. A Summary of the findings from the review conducted by the 2022 Science Board to inform the Midcourse Report and a Summary of the Midcourse Report will be provided in the August issue of *GeriNotes*. In the meantime, the connection between the President's Council on Sports, Fitness and Nutrition and Physical Therapy, of course, includes a vested interest in health and physical activity. The charge of the Council is to promote programs and initiatives that motivate people of all ages, backgrounds, and abilities, to lead active, healthy lives. Physical therapists are licensed primary health care providers who are doctorally trained experts in human movement. Physical therapists evaluate, diagnose, and manage health conditions, and design, implement and promote movement-related needs to individuals of all ages and improve quality of life through prescribed exercise, hands-on care, and patient education. Clearly, we are well positioned to contribute to and support the Council in their charge.

Ample evidence exists that exercise is a medicine which has been known for decades to be a necessary component of physical and mental health.

- President John F. Kennedy said, "We want a nation of participants in the vigorous life. It is my hope…that men and women who have reached the age of maturity will concern themselves with maintaining their own participation."[3]
- President Lyndon B. Johnson said, "A people proud of their collective heritage will take pride in their individual health, because we cannot stay strong as a country if we go soft as citizens."[3]
- President George W. Bush said, "I know you're a better worker if you exercise on a daily basis. I know you'll help keep the health care costs down in America if you exercise on a daily basis. I know your life will be more complete if you exercise."[3]

The only physical therapist to my knowledge to ever serve on the PCSFN was Admiral Penelope Slade Royall PT, MSW. She was the Acting Executive Director of the Council from 2002 to 2003 and 2009 to 2010. In 2007,

she gave the keynote address at the APTA NEXT Annual Conference in Denver, Colorado where she referred to physical therapists as "first responders for fitness."[8] At that time she was serving as the United States Deputy Assistant Secretary for Health in the United States Department of Health and Human Services.

Presidents and advocates for health have been telling each other and the community of stakeholders for decades *what* needs to be done. Now it is time to support more systemic changes in policy and the environment to allow those who support health and movement to effectively implement known and scientifically supported physical activity recommendations. Physical therapists must continue to promote our value to groups such as the ODPHP, the CDC, and NIH so that when interprofessional opportunities arise we are there to represent the community of older adults we aim to serve. Physical therapists must continue to work to direct a shift in the culture of medicine and rehabilitation from one that is reactionary to one that is proactive and that facilitates health, wellness, and prevention for the largest and fastest growing population in the United States, older adults. We can't do that if we are not present.

Note: The 2022 PCSFN Science Board subcommittee was comprised of scientific experts in the fields of physical activity, gerontology, and kinesiology. I was honored and amazed to learn that I am likely the first physical therapist appointed to this group since it was established in 2003. When I inquired about prior representation from our profession on the Science Board or the Council, I was advised that past rosters have been archived and are not readily available. Regardless, my opinion was welcomed and heard. My colleagues in this group turned to me for real-world advice when it came to discussion about how older adults implement physical activity programs and how the Science Board could use that information to identify gaps in the research for future recommendations. I am humbled to have been selected to represent our profession and the older adult community we serve in this way. I would like to extend my gratitude and appreciation to Cathy Ciolek for sharing this opportunity and urging me to pursue it, and to Leslie Alison for organizing and submitting my nomination packet.

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Walking - More Than Gait Training: Backwards on Purpose

by Sierra Downum-Meyers, PT, DPT; Chelsey Wojcik, PT, DPT; and Michelle Criss, PT, DPT, PhD

Editor's Note: This clinical case commentary was part of content for the May 2023 Journal Club. These case studies are intended to demystify the more formal statistics and format of a peer-reviewed article and translate key concepts into clinically usable information. Join us for Journal Club on the third Tuesdays of January, March, May, July, September, and November at 8 pm ET to discuss current concepts with a wide range of peers.

Case study presentation based on the research article from Journal of Geriatric Physical Therapy: Chan WLS, Cheung YT, Lee YW, Teo AM, Wo HK, Wong Y. Reliability, Validity, and Minimal Detectable Change of the Backward Walk Test in Older Adults with Dementia. J Geriatr Phys Ther. 2022;45(3):145-153

Walking is an essential skill that is taught and refined in physical therapy sessions. When fully functional, walking occurs in a variety of environments, with a variety of tasks, and is multi-directional; backwards walking represents one of the ways walking can occur.

Walking backwards is functionally required during routine daily activities such as: opening doors, backing up to chairs or beds, avoiding a falling object, or navigating small spaces.[1,2] Backwards walking is more challenging than forward walking because it requires more executive function in controlling neuromuscular activity and maintaining postural control.[1] Backwards walking is also an exercise means for improving proprioception, muscle strength, intralimb coordination, and balance.[2] The 3-meter backward walk test (3MBWT) can be utilized to assess neuromuscular control, proprioception, protective reflexes, risk of falling, and balance.[3] In a study conducted on healthy older adults, the 3MBWT demonstrated better diagnostic accuracy for falls than the frequently used Berg Balance scale and Timed Up and Go.[4] The 3MBWT is valid and reliable in people that have experienced a stroke.[3] Chan et al. conducted a study utilizing the 3MBWT in older adults with dementia and concluded that the 3MBWT had reliability and validity when utilized to assess balance and gait.[1]

The following series of case examples report on the ease of using the 3MBWT in inpatient environments not included in the Chan et al study – namely an inpatient rehabilitation unit. The 3MBWT was trialed over 10 days with several residents that could potentially have communication or cognitive deficits, but they did not all expressly have a diagnosis of dementia. A single clinician, utilizing a quieter area of the rehabilitation gym, performed all the tests after measuring and marking out the test distance with cones designating start and end of the 6-meter (m) test course. The first and last 1.5m were designated for the acceleration and deceleration phases, the middle 3m was utilized for timing the 3MBWT. The layout and procedures of the article were followed, except that the testing was not completed 3 times per trial. The rater provided external cuing if the participant deviated from the designated walkway in the following sequence: "(0) no cue; (1) verbal cue; (2) one-off physical cue, and (3) intermittent physical cuing."[1(p148)] During cues 2 and 3, the rater would make a tactile cue such as tapping on the participants' shoulder once or repeatedly.[1]

Sally (person 1) is a 92-year-old left-handed female with a history of hypertension (HTN) and hyperlipidemia, who presented after a fall with head strike and left hemiplegia. She was found to have a right posterior cerebral artery (PCA) stroke and was admitted for inpatient rehabilitation. She utilized a wheeled walker and completed the 3MBWT in 18.8 seconds, with contact guard assist for balance, and without verbal cuing. Her 3MBWT speed was 0.16 m/s (derived by dividing 3 meters by 18.8 seconds). Four days later, the testing was repeated twice with the patient's 3MBWT times recorded as 20.14 seconds (1 verbal cue) and 21.72 seconds (1 tactile cue) or 0.15 and 0.14 m/s. A wheeled walker and contact guard assistance were used in all additional trials.

Frank (person 2) is a 78-year-old male with a complex medical history including HTN, cervical stenosis with myelopathy, coronary artery disease (CAD), depression and anxiety, anemia, severe sleep apnea with CPAP use, basal cell cancer, urinary frequency, and dementia. He was admitted to inpatient rehabilitation following a mechanical ground-level fall resulting in a right femoral neck fracture. He underwent ORIF of his femur on 2/24/23. This gentleman completed the test 12 days after surgery with a wheeled walker, minimal physical assist (min A) for balance, 4 verbal cues in 24 seconds, or 0.125 m/s. Retesting occurred 5 days later, with a time of 43.82 seconds, a wheeled walker, min A, 1 verbal cue and 1 tactile cue when tested in the hallway outside his room. Then in the rehab gym, he completed the test in 45.91 seconds, a wheeled walker, min A, and 2 verbal cues. This resulted in 3MBWT speeds of 0.068 and 0.065 m/s.

Marge (person 3) is a 93-year-old female who had a ground level fall resulting in a large subdural hematoma and a right proximal humeral fracture. Marge has a medical history that includes skin cancer, peptic ulcer disease, HTN, and multinodular thyroid disease. She completed the 3MBWT in 40.45 seconds (0.07 m/s) without an assistive device, contact guard for balance, and 2 verbal cues. She was not retested.

Discussion

Like Chan and colleagues reported, we found the 3MBWT was generally easy to administer and safe to perform with proper guarding. Ease of administration can be increased if the walkway is pre-measured and marked. People can be taken to that pre-measured area to perform the test without taking the time to set it up each time. Our test cases, unlike the subjects in the journal club article, involved individuals participating in active rehabilitation. One out of the 3 people discussed had a diagnosis of dementia, while the other 2 had pathology involving the brain in the form of a stroke and a subdural hematoma.

Sally and Frank (persons 1 and 2) initially completed the 3MBWT slightly faster than 0.11m/s mean reported in participants that utilized an assistive device to complete the test in the Chan et al. study.[1] They completed the 3MBWT in 0.16m/s (Sally) and 0.125m/s (Frank) respectively. Person 3 (Marge) completed the test without an assistive device in 0.07m/s; this is significantly slower than what has been reported for those who did not utilize an assistive device (0.37 m/s). However, Marge recently had both neurological and musculoskeletal injuries from which she was recovering, whereas Sally and Frank had either a new neurological or musculoskeletal diagnosis but not both. This may have substantially slowed her walking. We were unable to find investigation into this measure's use in acute injury and rehabilitation.

During retesting, person 1 (Sally) completed the 3MBWT with slower times (18.8 seconds vs. 20.14 and 21.72 seconds). The standard error of measurement (SEM) found in the Chan et al study was 0.04 m/s in individuals with known dementia.[1] Sally's scores on the 3 trials of the 3MBWT (0.14 - 0.16 m/s) are within the SEM, indicating that the scores were not substantially different from one another as they did not exceed potential error. Person 2 (Frank), however, completed the retest outside the SEM indicating differences not due to error and that high variability existed in his performance. It is important to note that the number of verbal cues decreased in trials 2 and 3 for Frank, which may indicate he was processing the task more without assistance. This may have slowed his backward walking ability on the later trials.

The measured 3MBWT speeds of all our participants potentially indicated fall risk as their times were slower than 0.17m/s, the mean speed of fallers in the Chan et al study. Although some of our data aligns with that highlighted in the journal club article, it is important to note 3MBWT times/speeds may change in various settings and with different patient characteristics. Clinicians should be mindful of the populations and settings in which tests are studied, as the conclusions from published literature may not apply to their specific patient population.

Conclusions

The 3MBWT was relatively easy to administer even in acute rehabilitation settings. This version of the 3MBWT allows for ease of implementation for the clinician and for patients by adding a simplistic graded cueing system with verbal and tactile cues depending on the severity of the deviations. This cueing system was easily applied to older adults with high acuity in inpatient rehabilitation. Patients that do not respond well to verbal cues may respond better to tactile cueing which makes the graded cueing system very useful. Timing backwards walking yields an objective measure to quantify this activity in addition to the more traditional description of gait and balance quality (e.g., shortened steps, loss of balance, increased need for assistance, etc.) during challenging gait conditions. With the push to have more objective data for justification of services, the 3MBWT appears to be a time efficient way to assess maneuverability while walking, especially as we often see older adults who have fallen backwards in our clinical practice.

Although backwards walking is an integral part of completing activities of daily living, most clinicians may only focus on this aspect of mobility indirectly through transfers, navigating in smaller spaces, and multidirectional stepping. The 3MBWT allows clinicians

an objective measurement that directly assesses the person's ability during backwards walking. Pending the patient's performance, the 3MBWT may point a clinician towards the need for more repetition with backwards walking or even walking in multiple directions.

The 3MBWT may aid in a clinician's decision to integrate additional multidirectional walking interventions, but there is a gap in knowledge. The usefulness of the 3MBWT as a measure over time and in response to treatment has yet to be investigated. This should be an area of further research to fill the gap of knowledge to accumulate the most effective balance interventions. Clinicians and researchers should consider trialing this test in a variety of settings to assist with determining if the 3MBWT is useful in different populations.

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The Geriatric Amputee: The Role of Prosthetic Training In The Home Setting

by Noelle Alicea, PT, DPT, Geriatric Resident

Comorbidities can arise and a lack of proper interdisciplinary health management can place older adults at risk for snowballing health conditions. Diabetes mellitus (DM) is common, affecting over 15 million older adults in the US with the prevalence expected to increase exponentially over the next 20 years.[1,2] DM is a major risk factor for development of peripheral arterial disease (PAD).2 Narrowing of arteries inhibiting blood flow to the extremities, PAD is a common comorbidity that can result in tissue death.[3] Poorly managed DM can also result in endothelial dysfunction, the process accelerated by other pathologies common to persons with diabetes including hypertension and hypercholesterolemia/hyperlipidemia. Peripheral arterial disease can ultimately result in surgical lower limb amputation when the leg is unable to get the adequate blood supply.[3]

The natural healing process in older adults is complicated by age-related vascular changes such as blood vessels thinning, decreased elasticity, and poor compliance.[4] The resulting slowed wound healing from age-related changes can independently increase the challenges of post-surgical recovery. Additional postoperative barriers such as general deconditioning, decreased functional mobility, and a lack of social support can impact rate of recovery and the potential for successful outcomes.[2,5] Concomitant conditions such as diabetes can affect mental and physical health, making wound healing more difficult and prosthetic use for the older adult much more challenging.[2,3]

Post amputation, a typical course of rehabilitation may involve inpatient rehabilitation and/or subacute rehabilitation. Research shows evidence of a 65% success rate of returning to independent living one year after admission to a skilled nursing facility (SNF) (after amputation).[6] In 2022, the average length of stay in a SNF was 20-30 days; older adults are not receiving sufficient inpatient rehabilitation to reach full independent ambulatory level by time of discharge and, therefore, need to continue therapy services outside of the inpatient setting.[6] A major environmental issue impeding access to continued therapy may result from living alone or living with a partner whose age or physical or cognitive status prohibits assisting the patient with mobility and activities of daily living. Returning home at a wheelchair (WC) level or with limited walking ability is problematic as it can limit access to services and social interactions. This case study examines the efficacy of in-home prosthetic training after a transtibial amputation (TTA) in someone discharged to home from subacute rehabilitation at independent WC level (no prosthetic training).

Case Description

History of Present Illness: Harry is a 69-year-old African American male with history of PVD and DM who was discharged home from rehabilitation 2 years prior to PT referral (after trans-tibial amputation (TTA)) of his left lower extremity (LLE). Discharge from the subacute occurred as the country experienced the COVID-19 pandemic often delaying access to medical services. Due to the pandemic and medical complications the patient did not receive his prosthesis until December of 2021— almost two years since the amputation. At discharge from SNF (February 2020) he was independent with sit pivot transfers, sliding board transfers, and wheelchair (WC) mobility in and outside the home with manual WC. The patient began home therapy services in January 2022.

Past Medical History: Diabetes, hypertension, heart failure, myocardial infarction (one stent), stroke with left hemiplegia (side of the amputated limb), peripheral vascular disease, lymphedema, anxiety, glaucoma, blindness in the left eye, and right transmetatarsal amputation. Medications include acetaminophen; amlodipine; atorvastatin; carvedilol; Lisinopril; gabapentin; Systane ultra; Tresiba flex touch U200; supplements.

Review of Systems: Harry reported mild tenderness, redness, and recent discharge from lymphedema therapy for swelling in residual limb. The surgical amputation incision has completely healed without evidence of knots or scar tissue and with a cylindrical shaping of the residual limb. The patient denies significant shortness of breath (SOB) or history of falls since returning home. Mild phantom pain <1/10, intact light touch sensation, and no hypersensitivities in the residual limb is reported. A recent bilateral Doppler showed intact vascular supply.

Psychosocial History: Harry lives with a spouse in a one-story home with a ramp entrance. His wife has significant medical conditions which prevent her from providing physical assistance with functional mobility, but she is able to cook meals to accommodate his diabetic diet. Currently retired he previously worked in sales. He has a history of substance (ETOH) abuse but reports that he stopped drinking within the past 10 years. Harry enjoys going to the bank, socializing with his nephew, and watching television on the porch with friends and family.

Working Hypothesis: Harry can expect to progress to an independent ambulation level in the home based on his current primary and secondary diagnoses.[7] He is appropriate for this study since the amputation is a result of concomitant chronic conditions (PVD and DM), his age is >65 years old, he has no prior gait or prosthetic training experience, he has a prosthesis available for training, and he has homebound status.

Table 1. Outcome Measures (Initial)

Initial Evaluation - Day 1	
Patient Specific Functional Scale	.07/10 (Patient reported) –Independently put on prostetic 1/10 –Stand for 10 min 1/10 –Walk with prosthesis 0/10
Whooley Depression Scale	Negative
Day 2-3	
Modified 30-Second Chair Stand	2 Stands (with UE)
Amputee Mobility Preditor Tool (AMPpro)	9/43 (PF-R TT-L)
Day 5	
2-Minute Walk Test	60 feet (15 feet with rest break x 4) with rolling walker

Physical Therapy Examination: Exam revealed hip flexion strength 4-/5 on R, 3/5 on L. Hip extension and hip abduction 3-/5 bilaterally. Impaired hip extension ROM -17 degrees on R, -15 degrees on L and hip flexion WNL bilaterally. Knee ROM flexion and extension WNL with strength 4/5 flexion and 3+/5 extension on L and WNL on R. Pain was reported in medial aspect L knee 2/10 occasionally in weight bearing. Phantom limb pain <1/10 only occurred at rest and was inconsistent. Light touch sensation was intact L4-S1 dermatomes on the R, and L2, L3, and S2 on L residual limb (5/5 accuracy per dermatome); no reports of numbness or tingling in either LE. Mild erythema noted on R calf, 2+ edema R>L, cylindrical shaping of residual L limb. Weak pulses were assessed in L popliteal artery and r posterior tibial artery. At rest, BP was 120/84 with a pulse of 64.

Functional assessment revealed need for minimal assistance for sit to stand transfers from a WC to rolling walker (RW) and maximum assist from bed or recliner. He is independent in slide board or lateral transfers from WC <- -> bedside commode; his bathroom is not WC accessible. Home entrance and egress requires moderate to maximum assistance with his wheelchair. Although he received his prosthesis 10 days earlier, neither Harry nor his spouse can demonstrate prosthetic management including correct donning, doffing, use of liners, socks, or pin suspension system.

Assessment

Skilled physical therapy was recommended to educate Harry and his family's management of the new prosthesis, care of the L residual limb as well as problematic old R trans metatarsal amputation, as well as to increase home mobility. Impairments included hip range of motion restrictions, bilateral lower extremity weakness, impaired static and dynamic balance, edema in residual limb, and pain. Fall risk assessment included a modified 30 second chair stand test with a score of 2 stands (with upper extremity use) predicting high risk for falls. Activity limitations included difficulty with transfers (getting on/off toilet), ambulation dysfunction (in the home) and inability to utilize the stairs (to get in and out of home). This further resulted in participation restrictions limiting the patient from accessing all areas of his home, going to the store, and walking to and from doctors' appointments.

Intervention

Physical therapy was initiated at 2x per week in the home. Therapy services began with education on application and use of prosthesis, skin safety, wear times, and role of sock ply. Therapeutic exercise training included a daily stretching program to perform in prone to optimize hip ROM while minimizing risks for compensation or restrictions with functional mobility. In addition, supine/seated isolated strengthening exercises to improve motor control and strength bilaterally were utilized. Improved carryover of home exercise program (HEP) and increased wearing time of his prosthetic allowed progression towards standing and transfer training. The initial standing focus included weight shifting and static/dynamic standing balance to improve proprioceptive awareness of residual limb and identify limits of stability. Transfer training with modifications for forced use of prosthetic limb was also utilized to improve confidence, provide kinesthetic awareness, and promote use of prosthesis. Harry progressed toward walking once confidence with standing and transfers increased. Gait training began with bilateral upper extremity support on the patients deck to maximize stability and safety to simulate parallel bars. As confidence improved, gait impairments were identified, and the therapeutic exercise program was modified to address specific impairments. After progression to rolling walker, part-task training of specific phases of gait was performed with varying cues (visual, tactile verbal cues) used to improve prosthetic control and coordination. Ultimately, Harry progressed to unilateral upper extremity strengthening exercises and unsupported standing, which facilitated the progression toward unilateral upper extremity assistive devices. Part-task training for stairs was implemented including a gradual increase in stair height, decrease in UE support, weight shifting, and power training for step clearance, propulsion, eccentric lowering.

Table 2. Outcome Measures (Initial)

Therapeutic Exercise	**Supine:** Glute sets, Bridging, straight leg raises, hip rotation **Side lying:** Clam shells, hib abduction **Prone:** Hip flexor stretche, glute sets, hip extension, hip adduction w/extension **Seated:** Marches, Long arc quad, UL hip abduction (with resistance) **Standing:** Three way hip (abd, flex, ext), mini squat, single leg stance, hip hike
Neuro Reeducation	**Static standing:** supported, unsupported, foam, EO vs EC, perturbations, weight shifting **Dynamic standing:** stepping posterior, stepping over, UE overhead, reaching outside BOS
Gait Training	**Rolling walker (RW)** --> Counter and WBQC -->SPC –Indoor/outdoor/ramps –Utilization: visual cues: tape on floor, mirror
Therapeutic Activity	**Sit to stand:** to/from WC, up and down off bed, up and down from recliner, up and down from toilet **Stairs/ramp:** into and out fo home (small/large ramp), stairs off deck to car
Education	**Prosthetic training:** Donning and doffing prosthetic, wear time, skin assessment, weight shift placement, sock management, liner placement, pin suspension education, mirror training (COM), proprioceptive training foot, phantom limb pain education **Health management:** diet, exercise, medication, blood pressure, skin integrity, lymphedema, rate of perceived exertion, role of vision **Home exercise program:** Progression through therapeutic exercises with proper technique to perform independently as well as daily walking program in home (once independent with RW)

Results

In this case study, Harry began prosthetic training 2 years post discharge from the hospital, delay in rehabilitation services due to COVID-19 delays and medical restrictions. He demonstrated a gradual improvement in functional mobility, working toward independence with all transfers in the home (various surfaces), and progressing with walking tolerance and gait quality with least restrictive assistive device (LRAD). Quality of gait improved with evidence of increased pelvic rotation and elevation, improved lateral weight shift with decreased medial or lateral thrust, and enhanced symmetrical step length with decreased step width. Independent ambulation with RW in the home was achieved at discharge by walking up to 150 feet; he required standby assistance with a single point cane. Improvement in walking tolerance via 2-minute walk test was noted, but it was less than MDC of 112.5 feet.[12]

This gentleman showed an improved Patient Specific Functional Scale to 10/10 with confidence and independence with donning and doffing prosthetic, static standing up to 10 minutes, and walking around his home. Minimal detectable change (MDC) for lower limb amputees for 3 question PSFS is 3.1 which is significantly lower than the change in score of 9.7 indicating a change greater than chance.[8] The gains in functional mobility were accompanied by demonstrated safe management of his condition (no skin integrity or swelling issues bilaterally). An improved modified-30 second chair stand test from 2 stands to 7 stands demonstrates improved LE strength, power, and stability with transitional movements. This improved score is indicative of a decreased fall risk; a decreased risk and number of falls is extremely important to older adults because of the association to mortality.[9] This also brings the patient score closer to the age-related norm for older adults 60-69 of 12.9.[10]

The rise in Amputee Mobility Predictor with prosthesis (AMPpro) score from 9/39 to 30/39 indicates a significant improvement greater than the minimal clinically important difference (MCID) of 3.4 points. The AMPpro helps to determine the mobility potential for lower limb amputees with prosthesis.[11] The scoring correlates to K levels, with a higher K level supporting a higher functional potential. The patients' potential for mobility started at a K0 (non-ambulatory/assist with mobility) level and progressed to K2 (limited community ambulator) level.[11] K2 level predicts the patient has the potential to negotiate in the environment and encounter curbs, stairs, and uneven surfaces. Reaching K2 level enhanced the patient's quality of life and allowed the patient to return to participation level goals.[11]

Discussion

The results support the hypothesis that prosthetic training in the home is possible and can be extremely successful for older adults. Performing prosthetic training in the home allowed for immediate application of home modifications to maximize function in the patient's environment. It allowed the physical therapist to understand the resources that were available and provide direct education to promote acquisition of resources necessary to manage the patient's condition such as sphygmomanometer or adaptive equipment. In addition, the patient was able to participate in increased repetitions of functional task training in their

Table 3. Functional Mobility (Discharge)

Transfers	
5 Months	Independent STS (from WC, bed (low), and relciner (rocker)
Gait	
3 Months	SBA ambulation RW (in home)
4 Months	Independent RW (in home) SBA (outside) Min A ambulation WBQC
5 Months	SBA ambulation SPC (in home)
Stairs	
4 Months	SBA BL rail
5 Months	SBA UL rail and SPC

Table 4. Outcome Measures (Discharge)

Discharge - Session 44	
Patient Specific Functional Scale	10/10 (Patient reported) –Independently put on prostetic 10/10 –Stand for 10 min 1/10 –Walk with prosthesis 10/10
Modified 30-Second Chair Stand	8 Stands (with UE)
Amputee Mobility Preditor Tool (AMPpro)	30/39 (PF-R TT-L)
2-Minute Walk Test	150 feet with RW no breaks

personal environment which had direct carryover in establishing safe technique. The patient and therapist were also able to create a realistic home exercise program with the patient's available resources and space. At times, adaptations to the patient's plan of care to accommodate the home environment was required for safety. For example, when initiating ambulation trials, the patient's ramp and deck railings were utilized for bilateral support to simulate parallel bars, for safe initiation of gait training.

One area that did not show significant improvement was the 2-minute walk test. A possible reason for lack of significant improvement with walking could be that a deconditioned older adult and one with prior cardiac conditions at baseline are at a disadvantage when it comes to improving activity tolerance with a prosthetic.[13] Walking with a prosthetic requires an additional energy expenditure that may have been difficult to accommodate for.[13] No specific aerobic training was done in this plan of care. More research should be done to assess the functional implications of impaired energy expenditure in older adults with prosthetics.[14]

Limitations

A major limitation that extended the patient's plan of care was an inappropriately fitted prosthetic (too long). This required multiple visits with the prosthetist (in the home) to adjust the leg in order to improve gait quality and allow the patient to progress to a lesser restrictive assistive device. It is crucial to have a prosthetist available to the team when treating patients with limb loss as it is very common that prosthetic legs do not fit perfectly the first time after they are created.[14] Utilization of an at home prosthetist prevented the patient from plateauing, promoted optimal alignment of prosthetics allowing the patient to walk further, and prevented any risk for secondary conditions or falls from an inappropriately fit prosthetic.

Conclusion

Post-prosthetic outpatient rehabilitation in the home is a possible and reasonable option for older adult patients to reach successful functional outcomes and improve quality of life. Post-prosthetic rehabilitation can certainly be a challenging and lengthy recovery process but performing this in the home with patient specific resources and goals can potentially combat length of care issues as it reduces the learning curve required from clinic-based training. In addition, psychosocial, economic, and environmental restrictions can also play a large role in the rehabilitation of the older adult; this makes outpatient therapy in the home an ideal option. Lastly, increasing education on health management (signs and symptoms PVD) and promoting improved lifestyle choice (DM management) can assist with decreasing the risk of a second amputation. More research should be done to assess the value of physical therapy in the home when goals are focused on increasing patient independence with health management and function.

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Eyes are the Window to . . . GAIT?

Part Two: Training the Oculo-Motor System for Safer Ambulation

by Carole Lewis, PT, DPT, PhD, FAPTA; Linda McAlister, PT, DPT; and Janene Barber, PT

The importance of considering vision in a comprehensive examination of gait performance was discussed in the March edition of GeriNotes. Gaze stability training and eye movement training have been found to be effective interventions for improving gait. In this article we will dig a bit deeper into specific diagnoses that may benefit from this and protocols that have proven beneficial to use.

Zampieri and Di Fabio's work compared the benefits of a program of balance training with eye movement and visual awareness training versus balance training alone for people with PSP (Progressive Supranuclear Palsy).[1] Gait and mobility problems are significant features of this disease, specifically oculomotor problems like vertical gaze palsy and deficits in VOR suppression. Improvements in spatial gait parameters, gait speed, and TUG scores were observed for participants who received balance + eye training. Specific exercises employed were:

Visual Awareness Training: participants stood in the middle of a room and were asked to identify objects by turning in place and moving their eyes and head in all directions for hidden objects.

Biofeedback Training: the participant practiced maximum horizontal and vertical voluntary saccades with no target and vertical downward saccade to a target, repeating 10x with and without auditory feedback.

Computer Training: saccades was practiced in front of screen in which random arrows appeared: participants practiced making rapid eye movements toward arrow on screen for 8-10 minutes in 2-minute sessions.

People with diabetic peripheral neuropathy (DPN) have less accurate foot placement with walking which can increase risk for falling. The frequency of tripping is a factor in the probability of falling[2]. Handsaker et al studied a multi-faceted intervention that improved stepping accuracy in patients with DPN[2]. Patients in the intervention group participated in a weekly, one-hour session for 16 weeks. A series of resistive training exercises and visual gaze training strategies were performed. In the visual gaze and motor control training task, participants negotiated stepping a walkway with 6 irregular stepping targets. Prior to each walkway negotiation, the participant was instructed to visually trace their upcoming walk 3 times, this was to encourage visually planning their route prior to initiation of the stepping task. This was repeated 5 times in each direction. The intervention group improved their stepping accuracy by 173%.

Vigorous research continues in gaze stability and vision in therapy. The original clinical practice guidelines (CPG) for vestibular rehabilitation (VR) by the APTA-Academy of Neurologic Physical Therapy were published in 2016[3] with revisions released in 2022[4]. These guidelines established optimal gaze stabilization exercise dosage of treatment in individuals with peripheral vestibular hypofunction (unilateral and bilateral). Clinicians can prescribe home exercise programs for gaze stabilization at a minimum of:

1. 3 times per day for a total of at least 12 minutes daily for individuals with acute/subacute unilateral vestibular hypofunction.
2. 3 to 5 times per day for a total of at least 20 minutes daily for 4 to 6 weeks for individuals with chronic unilateral vestibular hypofunction.
3. 3 to 5 times per day for a total of 20 to 40 minutes daily for approximately 5 to 7 weeks for individuals with bilateral vestibular hypofunction.

Physical therapists need to add visual and oculomotor assessments into our repertoire. The research evidence shows the importance of vision for safe ambulation. Identifying impairments in vision will make designing treatment strategies more effective and efficient for all older adults.

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